A RETROSPECT AND PROSPECT ON THE DEVELOPMENT OF CHINA'S STOCK MARKET

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Abstract

The purpose of this research is to investigate the development and performances of the Chinese stock markets and the relationship between China's stock market development and economic growth. In theoretical discussions, we first review some previous studies about the relationship between financial development and economic growth, then highlight the role of stock markets in economic activity, illustrate channels that have been identified by the theoretical research through which stock markets can influence economic growth, and finally summarize the previous empirical evidence. Following this, we focus on the development course of China's stock market, analyze its characteristics, and discuss the problems caused by the market's system flaws. In empirical analysis, we investigate actual performance of the Chinese stock markets, using the time series analysis techniques, and discuss particularly the relationship between the stock market development and economic growth. The empirical results are consistent with our theoretical discussions that a policy-oriented stock market is less efficient and is, to a certain extent, unlikely to produce a significant and positive effect on economic growth. Given that one of the most important barriers to the development of China's stock market might be administrative interference of the government, this study finally addresses some corrective policy changes which may exert positive influence on the future development of China's stock market.

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List of Abbreviations

ADF Test	Augmented Dickey-Fuller Test
CSRC	China Securities Regulatory Commission
GDP	Gross Domestic Product
IPO	Initial Public Offering
M&A	Merger & Acquisition
NET System	National Electronic Trading System
NPL	Non-Performing Loan
OLS	Ordinary Least Squares
OTC	Over-The-Counter
OTCBB	Over-The-Counter Bulletin Board
PBC	People's Bank of China
PR	Public Relation
PT System	Particular Transfer System
RMB	Renminbi, the currency of the People's Republic of China
SHE	Shareholding Enterprise
SIF	Stock Index Future
SME	Small and Medium-sized Enterprise
SOE	State-Owned Enterprise
SSE	Shanghai Stock Exchange
ST System	Special Treatment System
STAQ System	State Trading Automatic Quoting System

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To My Parents

Who Deserve All I Can Offer Them

CHAPTER 1: INTRODUCTION

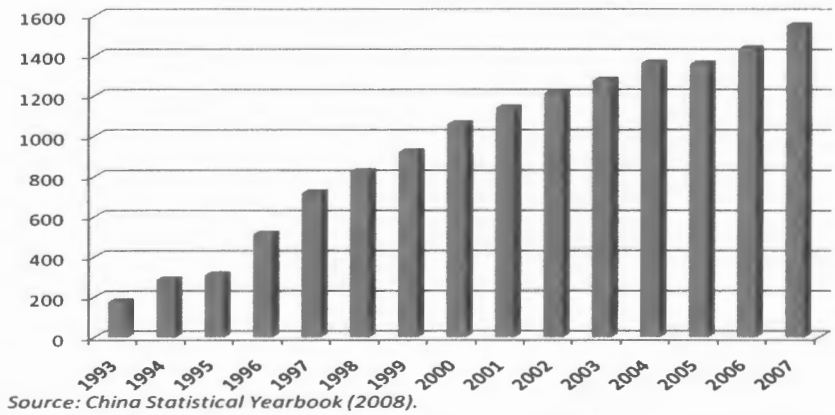
1.1 Research Background and Significance

In a broad sense, the securities market refers to a public market for the issuing and trading of stocks, bonds, investment funds and other marketable securities. Since the market size of bonds and investment funds are relatively small— hence contributing less to economic growth in China — compared to that of stocks, this research will primarily focus on the stock market.

China's stock market took off after the early 1990s when the Shanghai Stock Exchange (December 1990) and the Shenzhen Stock Exchange (July 1991) were established successively. Since the Shanghai and Shenzhen markets are dominant in terms of the impact on China's economy, in this article, the "China's stock market" will refer to the Shanghai and Shenzhen stock markets when there is no special clarification. In spite of the very brief history, about 20 years, the securities market has grown at a high speed, with stocks as the main instrument traded in the securities market. As an emerging market, the stock market has been flourishing and is becoming an indispensable part of China's national economy. The number of companies listed on the Shanghai and Shenzhen exchanges increased rapidly, from only 10 in 1990 to 1,550 at year-end 2007 (see Figure 1 below). Market value also soared enormously; the total capitalization of the

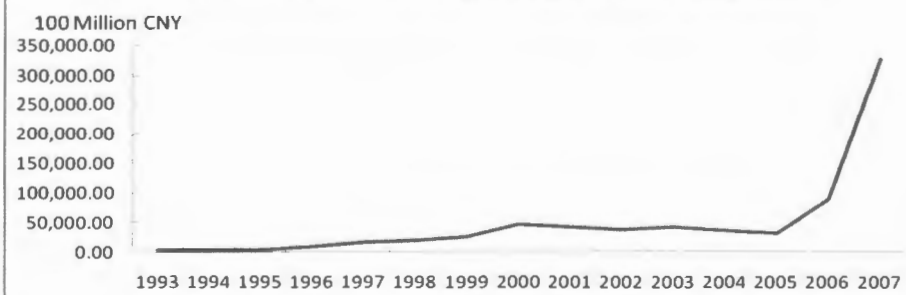
Shanghai and Shenzhen markets rose from 353.1 billion RMB[1] in 1993 to 32,714.1 billion RMB at year-end 2007 (see Figure 2 below). Stock market capitalization exceeded fifty percent of GDP (53.8%) for the first time in 2000 (see Figure 3 below), and China's stock market is the second largest in Asia after Japan's.

Figure 1
Number of Listed Companies (A and B Shares) in Mainland China, 1993-2007



Source: China Statistical Yearbook (2008).

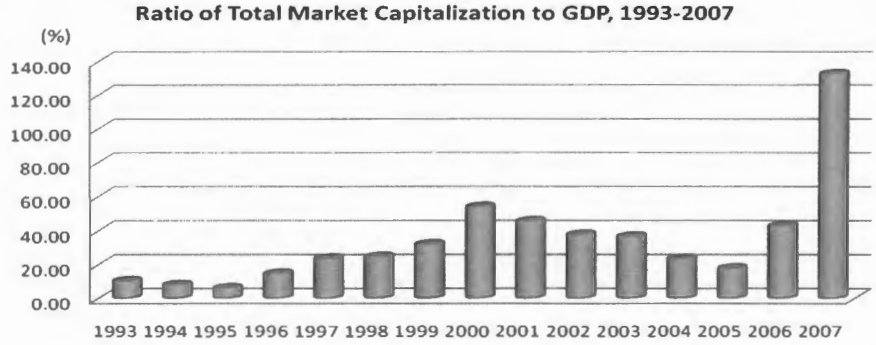
FIGURE 2
Total Market Capitalization of China's Stock Market, 1993-2007



Source: China Statistical Yearbook (2008).

[1] RMB denotes renminbi, the currency of the People's Republic of China.

FIGURE 3
Ratio of Total Market Capitalization to GDP, 1993-2007



Source: China Securities and Futures Statistical Yearbook (2008).

China's stock market was developed during the system transition from a central planning economy to a market economy and consequently assumes the characteristic of imposed institutional change. According to Lin (1989), "There are two types of institutional changes: induced and imposed. An *induced* institutional change refers to a modification or replacement of an existing institutional arrangement or the emergence of a new institutional arrangement that is voluntarily initiated, organized and executed by an individual or a group of individuals in response to profitable opportunities. An *imposed* change, in contrast, is introduced and executed by government orders or laws (Lin 1989: P.13)."

During the development of China's stock market, the relating authorities of Chinese government issued a series of regulations concerning the stock market, which aim at regulating the market's running and developing direction. China's stock market has gradually become a well-known "policy-oriented market" and this kind of characteristic causes the stock market to have serious system flaws. Contrary to the government's original intention to reassure the development of China's stock market in a

healthy and steady direction, some of those regulations do not propel the development of the stock market but bring an obtrusive effect on it, leaving a series of problems to be addressed.

Although China's stock market has achieved great accomplishments in a short period, there are still many problems and challenges such as a number of ineffective laws and regulations that have begun to restrict the development and growth of the stock market. Since the role of the stock market has become more prominent, China's long-term, rapid economic growth can be jeopardized unless those above problems were effectively handled. Hence it is of prime importance to carefully review and study the experiences and lessons from the development course of China's stock market, and this research is an attempt on this topic.

1.2 Literature Review at Home and Abroad

The issue of economic growth has attracted a lot of academic attention since the rise and development of Economics. As the modern financial system develops, the relationship between financial development and economic growth, especially that between stock market development and economic growth, has drawn increasingly worldwide attention of economists. Many scholars have made brilliant contributions in both theory and empirical studies.

1.2.1 Theoretical Underpinnings on the Relationship between Stock Market Development and Economic Growth:

Considerable attention has been drawn over the past few decades to the relationship between financial intermediation and economic growth and a burgeoning literature has been produced. While Schumpeter (1911) was among the first to posit links between the financial and real sectors, ever since the seminal contributions of Goldsmith (1969), Mckinnon (1973) and Shaw (1973), a debate has been ongoing about the theoretical issue of whether or not the financial system is vital for economic growth.

One line of research argues that the financial system is inconsequentially linked to economic growth. This vein of research argues that the financial system only plays a very minor role, if any, in economic growth. Robinson (1952) argues that the financial system does not promote but simply responds to real economic activity by suggesting that "... where enterprise leads finance follows". Similarly, 1995 Nobel laureate Robert Lucas (1988) argues that economists frequently "badly overstress" the role of finance in economic growth. Moreover, Stern's (1989) survey of development economics does not even mention the role of the financial factors in economic development, not even in a section that lists "omitted topics".

However, another prominent line of research stresses that finance plays a pivotal role in economic growth and development. Bagehot (1873), Schumpeter (1912), Hicks (1969), and Miller (1988) give conceptual descriptions of how and empirical evidences of

when financial development can affect economic performance. Financial development involves improvements in allocating capital, mobilizing savings, exerting corporate control, easing risk management, and providing liquidity (Diamond and Dybvig, 1983). Subsequently, these financial functions influence savings (Pagano, 1993; Levine, 1997) and investment decisions (Greenwood and Jovanovic, 1990), and technological innovations (King and Levine, 1993b) and hence economic growth. According to these economists, a well-developed financial system is critical for long-run economic growth.

It is quite understandable that earlier work focuses on general importance and broad measures of financial development without distinguishing the stock market and other intermediaries since stock markets are only a small part of the overall financial markets. Rousseau and Wachtel (1998) list four reasons why a stock market is a consequential financial intermediary even when equity issuance is never a large fraction of total sources of funds. First, by providing investors and entrepreneurs with a potential, liquid exit mechanism, the existence of a stock market makes investment more attractive and hence might increase real economic activity generally. Second, stock markets facilitate capital inflow – both foreign direct investment and portfolio investments – that are potentially vital sources of investment funds for emerging markets and transition economies. Third, stock market liquidity encourages both international and domestic resource mobilization, transferring investors' surpluses from short-term assets to the long-run capital market where firms have permanent use of the capital raised for risky, long-duration and high-return projects. Finally, a stock market provides influential information that improves the efficiency of financial intermediation generally.

In fact, over the last two decades, the increasing intermediation role of stock markets, deriving from the financial liberalization measures, has shifted the research interest from focusing on banking, the traditional intermediation channel, to focusing on stock market financing. The growing interest in the role of stock markets as a stimulus to economic growth has opened a new avenue of research into the relationship between stock market development and economic growth. Similarly, whether stock markets are merely burgeoning casinos where "... a serious situation can develop ... when enterprise becomes the bubble on a whirlpool of speculation" (Keynes 1936), or whether stock markets are critical for sustained economic growth is a long-debated issue.

As one of the financial intermediaries, stock markets can influence economic growth through various functions, such as: savings mobilization, liquidity, provision of information regarding firms, corporate control, risk management and exchange facilitation. It is generally recognized that by altering the quality of these functions, the existence of stock markets can affect the rate of economic growth. Debate arises, interestingly, over the sign of these effects. Some suggest that there exists a positive relationship between stock market development and economic growth, while others argue that stock market development might be negatively linked to economic growth.

Firstly, stock markets may enhance economic growth through liquidity. Diamond and Dybvig (1983) point out that a prominent function of stock markets is to offer liquidity to individual investors. Levine (1991) takes the Diamond-Dybvig set-up, models the endogenous formation of equity markets and links this to a growth model. Levine

(1991) and Bencivenga, Smith, and Starr (1995) show that enhanced stock market liquidity reduces the disincentives for investing in long-gestation and high-return projects by reducing trading costs, since investors are allowed to buy and sell quickly, cheaply and confidently when they wish to alter their portfolios. The increase in liquidity leads to expansions in trading activity and aggregate equity capital and is expected to spur growth. However, it is necessary to take into account as Bencivenga and Smith (1991) argue that by reducing uncertainty, the increase in liquidity may reduce saving rates enough to incur a negative effect on economic growth.

Secondly, stock markets can influence real economic activity by mobilizing and pooling savings. Greenwood and Smith (1997) suggest that large, liquid, and efficient stock markets may ease savings mobilization. Specifically, the existence of stock markets lowers the transaction costs of agglomerating capital from agents with surplus resources to productive units raising investment funds and overcomes the information asymmetries associated with making investors feel comfortable in relinquishing control of their savings. Better savings mobilization increases capital accumulation, improves resource distribution, and hence boosts technological innovations and economic growth. Moreover, by lowering transaction costs, stock markets can promote specialization. Saint-Paul (1992) points out that stock markets may have an additional growth effect by encouraging specialization of production. Theoretical disagreement exists, however, on the value of stock markets for raising capital. Mayer (1988), for instance, argues that equity issuance is a relatively minor source of corporate finance.

Thirdly, generation of information concerning potential investments and allocation of capital is another vehicle by which stock market development may affect economic growth. High information cost may prevent capital to flow to its highest valued use since individual investors may not have the ability to collect, process, and produce information associated with evaluating firms, managers, and market conditions. Nevertheless, stock markets undertake the costly process of researching potential investments for investors. Reduced information cost improves resource distribution and thus accelerates economic growth (Ramakrishnan and Thakor 1984; Boyd and Prescott 1986; Allen 1990; Greenwood and Jovanovic 1990; King and Levine 1993; Kashyap, Stein and Rajan 1998). Furthermore, stock markets may stimulate the acquisition of information regarding firms (Grossman and Stiglitz 1980; Merton 1987; Holmstrom and Tirole 1993). As stock markets become larger and more liquid, investors have greater incentives to research and monitor firms. It's easier to profit from this information before which becomes widely available and prices change. Opinions differ, however, on the importance of stock markets in enhancing information. For example, Stiglitz (1985, 1994) considers that stock market liquidity will not encourage incentives for expending resources to acquire information; conversely, an adequately functioning stock market will reveal information quickly through price changes and efficient public revelation will reduce incentives of information acquisition.

Fourthly, in terms of monitoring firms and exerting corporate control, Diamond and Verrecchia (1982) and Jensen and Murphy (1990) emphasize that well-developed stock markets may enhance corporate governance by mitigating the principal-agent

problem through tying manager compensation to stock performance. In virtue of a closer link aligning the interests of managers and owners, managers would strive to maximize a firm's equity price and act in the best interest of the providers of capital. In addition, equity holders exert corporate control by takeover threats that may induce managers to maximize firm value (Laffont and Tirole 1988; Scharfstein 1988). However, theoretical debate exists on this issue too. Stiglitz (1985) argues that stock market development will not improve corporate governance significantly. Takeover threats can be impaired because outsiders usually have worse information about firms than do owners and hence are reluctant to take over firms. Furthermore, Shliefer and Vishny (1997) show that information asymmetries may keep diffuse shareholders from exerting corporate governance effectively. Finally, by easing counterproductive corporate takeovers, stock market development may hurt economic growth (Shliefer and Summers 1988; Morck, Shliefer and Vishny 1990a, 1990b).

Last but not least, stock markets provide vehicles for trading, pooling and diversifying risks. Intuitively, savers do not like risk while higher-return projects tend to be comparatively risky. Greater risk diversification through internationally integrated stock markets can foster a portfolio shift towards higher-return projects, promote resource distribution and finally improve economic welfare (Gurley and Shaw 1955; Patrick 1966; Greenwood and Jovanovic 1990; Saint-Paul 1992; Devereux and Smith 1994; Obstfeld 1994; Acemoglu and Zilibotti 1997). Again, theory is unclear, however, about the effects of greater risk diversification on economic growth. Stock markets can influence the perceptions of risk. There might be less precautionary saving if risk falls. Negative

impacts are feasible if risk amelioration can depress savings rate and slow economic growth (Devereux and Smith 1994; Obstfeld 1994).

Some theoretical contributions in China support the view that the stock market may promote long-run economic growth. Through the thorough analyses into the real problems concerning every stage of China's stock market development track, Yang Li and Guogang Wang (1999), Yang Li and Dexu He (1999), and Yang Li and Songqi Wang (2000) demonstrate that China's stock market takes effect in many aspects, such as the distribution of financial resources, risk pricing, the provision of liquidity, savings mobilization, the demarcation of the property right and risk diversification, thereby facilitating investment and boosting economic growth.

Kaiguo Wang (1999) puts forward three mechanisms through which the stock market can improve economic performance, including the mobilization of savings for investment, the improvement of the efficiency of capital distribution, and the enhancement of the rate of national savings. Furthermore, he mentions that the establishment of the stock market has transformed conservative understandings of the public and provides them with a brand-new perspective to comprehend the concept of market economy, supplying valuable human resources prepared for the transition from a central-planning economy into a market-oriented economy.

1.2.2 Empirical Evidence on the Relationship between Stock Market Development and Economic Growth:

Given that stock market development takes place in tandem with other aspects of the financial sector, earlier empirical efforts have taken a broad view of financial development, mainly by employing bank-based quantitative measures. Goldsmith (1969) is one of the pioneers to assess whether finance exerts a causal influence on growth. Using cross-country growth regressions, he analyzes a set of 35 countries over the period 1860-1963 (when available) and graphically documents a positive correlation between financial development and economic growth. King and Levine (1993a, 1993b) improve Goldsmith's work by systematically controlling for other factors that affect growth and they construct additional measures that are more accurate proxy for the level of financial development. Then they relate the overall depth of the banking sector to economic growth in a cross-section of 77 countries from 1960 to 1989 and show that finance predicts growth; however, like Goldsmith, they still do not formally deal with the issue of causality. More recently, Demirgüc-Kunt and Levine (1996) find that in a sample of 44 developed and emerging markets from 1986 to 1993, countries with well-developed stock markets tend to have well-functioning banks and other financial intermediaries as well, and vice versa. Also, Demirgüc-Kunt and Maksimovic (1996), utilizing firm level studies for 30 industrial and developing countries covering the time span from 1980 to 1991, argue that there are complementarities between banks and stock markets in developing countries. Boyd and Smith (1996) further comment that as an economy develops, the

debt-equity ratio tends to rise, with firms' two financing choices being complementary. Moreover, Demetriades and Hussein (1996) and Arestis and Demetriades (1997), using measures of financial activity, report mixed causal findings, especially for developing economies. Bell and Rousseau (2001) utilize the detailed country case-studies for India and point out that the financial sector has been instrumental in improving economic growth.

Recent empirical research allows for a separate role for stock market development in economic growth. Levine and Zervos (1998), after examining a sample of 42 countries over the period 1976-1993, demonstrate that numerous measures of stock market development are positively and significantly correlated with measures of real economic activity. And they conclude that there is no tension between bank-based and market-based systems[2] (both enter the growth regression significantly), since stock markets provide different financial services from banks. Similarly, Atje and Jovanovic (1993) construct a cross-country panel of 40 countries from 1980 to 1988 and report that the value of stock market trading relative to GDP has a significant influence on economic growth after controlling for lagged investment, while bank credit does not. However, Harris (1997) argues that the relationship between stock market development and economic growth is at best very weak. Reestimating the same model for 49 countries from 1980 to 1991, but substituting current investment for lagged one and utilizing two-stage least squares method, he supports the view that the stock market variable does not seem to affect economic growth in the full sample (which includes both developed and

[2] It is similar with the view of Demirgüc-Kunt and Levine (1996a, 1996b) that there is no distinction between bank-based and market-based financial systems.

developing countries) and of the subsample of less-developed economies; meanwhile, in terms of the subsample of developed countries, the level of stock market activity does have some explanatory power but its statistical significance is pretty weak.

A large body of empirical research referring to the case of China reveals the conclusion that, up to date, China's stock market development is not that strongly positively linked to economic growth. Performing the linear regression analysis through ordinary least squares method with the relevant data over the period 1994-1998, Ruyong Tan (1999) finds that in China the nexus between financial intermediation and economic growth is significant and positively related, but the effect of stock market development on economic growth is limited. Similarly, using the AK Model and two-stage least squares regression analysis, Jun Wang (2002) explores the relationship between China's capital market development and economic growth; he finds that there exists no obvious correlation. He further concludes that China's capital market has only very weak effect on economic growth and is negatively linked to economic growth.

1.3 Research Methods and Outline of the Project

1.3.1 Research Methods

A broad-brush picture of the relationship between stock market development and economic growth has been recognized mainly through cross-country growth regressions. While the level of stock market development has been found to explain part of the

variation of growth rates across countries and seems to be a good predictor of economic growth, researchers have not reached an agreement on the issue of causality nor do they settle the argument on the endogeneity of the variables used in the analysis (King and Levine 1993a, 1993b; Levine and Zervos 1998). In addition, the relationship between stock market development and economic growth may reasonably be expected to vary considerably across countries, depending on their different institutional characteristics, market size and circumstances. Finally, cross-section studies are criticized[3] and those results derived from cross-country growth regressions are suggested to be viewed with some caution (Levine and Renelt 1992; Arestis and Demetriades 1997; Luintel and Khan 1999; Bell and Rousseau 2001). Contrary to cross-country studies, time series methods have important econometric advantages in examining the effect of stock market development on economic growth. Being less likely to suffer the limitations of cross-country growth regressions, time series approaches can account for the specificity of individual country and are better able to address the issue of causality, since each country may has its own causality pattern and unique evolution path over time (Rousseau and Wachtel 1998).

In this research, besides theoretically qualitative analyses, we also conduct empirical analyses to investigate actual performance of the Chinese stock markets, and particularly we will investigate the relationship between China's stock market development and macroeconomic growth. Since most macroeconomic time series variables are generally non-stationary so as to make conventional hypothesis-testing

[3] The widespread skepticism derives from the facts that cross-section studies are based on a fragile statistical basis and that the results do not adequately account for the variation across countries with different institutional, legal and political settings.

procedures based on the t, F, and χ^2 test statistic unreliable, it is not appropriate to apply the conventional regression techniques to investigate their relationships. In order to avoid the possibility of spurious results, our empirical investigation is conducted within the framework of testing for unit roots and testing for co-integration in macroeconomic time series, which started gaining popularity in the early 1980's.

1.3.2 Outline of the Project

Based on such backgrounds, the rest of the paper is structured as follows. In Chapter Two, I will briefly present the development process of China's stock market, analyze its characteristics, and reveal the problems caused by the deficiencies of China's stock market system. In Chapter Three, I will use the time series technique to analyze the mechanism of the relationship between performances of the Shanghai stock market and the Shenzhen stock market, that between performance of the individual sector and the whole market, and most importantly, that between stock market development and economic growth and the scale of their mutual influence. After identifying and analyzing the barriers to the development of China's stock market, in Chapter Four, I will suggest some corrective policy changes. Finally I will summarize this research project and provide some concluding remarks in the last chapter.

CHAPTER 2: THE DEVELOPMENT OF CHINA'S STOCK MARKET

2.1 Background

In 1978 the Chinese Communist Party held the Third Session of the Eleventh Central Committee of the Party, which established the far-reaching reform and "Open Door" policy[4] and laid the foundation for the creation and survival of a modern stock market. The economic reforms were designed to strengthen China's economy by transforming the traditional highly-centralized planning economy (1952-1978) into a market-oriented economy. However, the period of economic expansion induced by the economic reforms was dampened by many critical obstacles, such as the scarceness of capital supply and the inefficient operation of State-Owned Enterprises (SOEs). At that time, the establishment of the stock market has emerged as one of many novel phenomena in China's economy that collectively motivated China to implement a new round of economic reforms. China's stock market plays a role more than a mere financial intermediary; it represents a move away from the central-planning economy to the application of the market mechanism for the distribution of financial resources. There is no denying that the development of the stock market was inextricably linked to the changing socio-economic context and the context can be broadly summarized as a combination of the following four conditions:

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[4] In 1978 Deng Xiaoping launched China on an original path to socialism with "Chinese characteristics". Deng's Open Door policy included both economic and cultural aspects, but both represented a new "openness". On the economic side, free markets were encouraged at the lower levels of the Chinese economy□ while in the cultural domain□ China became a more engaged partner in the international exchange of ideas.

First, the establishment of a stock market provides channels for industrial restructuring in China. In the early 1980s, the Chinese government has already realized the significance of making efforts to push forward industrial restructuring and upgrading across the board, an influential strategic plan to boost economic development. However, at the threshold of a market economy, China did not have well enough basic infrastructures, not to mention a well-developed financial system to effectively mobilize and distribute resources. Some suggest that this object could be achieved by remolding widely scattered firms into a few gigantic corporate groups. Unfortunately there are two difficulties to adopt this method: one difficulty comes from the challenge that it's hard for firms from different departments to be smoothly restructured into gigantic conglomerates due to many real difficulties; another reason is that corporate groups can be better accomplished naturally following economic interests instead of succumbing to administrative pressure. The development of the stock market can relatively overcome these two difficulties and support the implementation of a large-scale industrial restructuring and rejuvenation program by mobilizing capital flow and by distributing capital to the highest valued use in the economic system.

Second, there is an urgent demand to develop a stock market in order to propel China's State-Owned Enterprise (SOE) reforms. One important defect of the previously central-planning economy system was the over-control and over-regulation on the SOEs. The policy burdens on the SOEs gradually resulted in many negative consequences on the SOEs, such as the soft budget constraints, the unclear line between the functions of

the government and enterprises, the problems regarding property right, the incentive problems and the enterprises' lack of viabilities. China's SOE reforms commenced from the reform of the incentive mechanisms of the SOEs and later gradually transited to the reform of the ownership structures of the SOEs. China's stock market has assumed a particularly pivotal role in the SOE reforms since its rapid growth in the early 1990s; and it helps to propel the course of the SOE reforms by two ways. On one hand, the existence of the stock market expands the financing channels available to enterprises and thus relieves the government's financial burden of sustaining small- and medium-sized SOEs which are strategically unimportant. On the other hand, by changing entrepreneurs' ownership structure and internal governance structure, it can encourage the SOEs to improve their management and efficiency in fund use through exerting supervision from the shareholders, thereby successfully transforming them into market players.

Third, general enterprises faced financing problems caused by a weak financing system, providing the motivation to establish a stock market. During the period of the central-planning economy, the financing system in China was dominated by fiscal financing, along with a limited amount of bank financing in order to meet short-term cash flow. Funds were distributed according to "unified revenue and unified expenditure" system and were served mainly for the investment needs of SOEs. However, the inefficient operation led to numbers of loss-making SOEs and a decrease in revenue. Many SOEs were merely sustained by the loans from the state banks. Over the period from 1958 to 1978, Fiscal Avenue averaged out at 37.2 percent of total national income; during the same period, 84 percent of the funds needed for capital investment by state-

owned enterprises were provided from the national budget, in most cases requiring no repayment (Wang 1999). It is reported that four state-owned commercial banks officially had non-performing loans (NPLs) worth 30 percent of their total loan portfolios at year-end 2001 as a result (Green 2004). However, this old restricted financing system cannot satisfy the increasing huge fund demand deriving from a newly market-oriented economy. The establishment of China's stock market breaks down the long-standing financing system which relies on the government and the state-owned banks, provides a public function to mobilize the idle capital in the economy, and efficiently distributes them to the production sectors that need them. In this way, entrepreneurs can solve their financial difficulties by raising funds directly from the stock market. Since then, the formation and expansion of enterprise capital has increasingly come to depend on capital markets, particularly on the stock market. A diversified financial system came into existence.

Fourth, for potential investors, a stock market provides a legitimate investment channel for enterprises' and individuals' surplus funds. Ever since 1978, the establishment of the "Open Door" policy has ceased the practices during the period of the central-planning economy that all enterprises' should turn in their surplus funds to the government and that forbid salary gap among residents to realize salary equalization. Especially after the implementation of the household responsibility system in 1979, the agricultural economy was revitalized and hence farmers' income increased. The surplus funds available to local governments, enterprises and residents rose, creating a pressing need for investment channels. As a result, a new financial intermediary -a stock market- came into being. From a micro perspective, the existence of the stock market provides a

channel to realize the preservation and appreciation of capital value; from a macro perspective, it promotes the socio-economic development by mobilizing savings and distributing social capital.

2.2 Brief History of the Development of China's Stock Market

China's authority once closed all stock exchanges and securities companies due to political issues. Until December 1978, China initiated the economic reforms in an attempt to establish a market-oriented economy. The implementation of the economic reforms involves many major measures, including: establishing special economic zones in the coastal areas, supplying favorable environments for foreign investment, permitting the issue of securities, allowing SOEs to experiment in the shareholding system, and so forth. The reform policies cater for the needs of enterprises' increasing fund demand in a newly market-oriented economy. In September 1984, Beijing Tianqiao Department Store Company, the first shareholding enterprise, was established in Beijing by the issue of the three-year maturity equities. In November of the same year, Feile Acoustics Company launched an offer of five hundred thousand RMB nonredeemable equities to the public in Shanghai. After the initial practices of shareholding enterprises (SHEs), many SOEs (in Beijing, Shanghai, Tianjin, Guangzhou, Shenzhen, Shenyang, and Wuhan) followed and the trend swept over all the major cities in China. Consequently, the scattered, rudimentary stock issuance market has begun to take shape.

On China's case, since the securities was not the outcome of an advanced market mechanism but more like a result of government's policy intervention, it's not surprising to find that the existence of securities was not accompanied by a secondary market. This is coincident with the truth that the original objective of the Chinese government in permitting the issue of securities was to broaden financing channels, and to improve the operational efficiency of the SOEs, instead of establishing a trading market for the securities holders. However, having experienced black-market trading and over-the-counter (OTC) transactions, it turns out that a primary market cannot exist and operate soundly unless there is a secondary market. In September 1986, the Shanghai Branch of the People's Bank of China (PBC) determined to allow security transfers on a public basis and authorized the Shanghai Trust and Investment Company to act as an intermediate agency for buying and selling securities. The first Chinese OTC market was established then and this marked the beginning of official securities trading activity in China. The official re-establishment of the stock market in China was marked by the opening of the Shanghai Stock Exchange and the Shenzhen Stock Exchange in the early 1990s. Thereafter China's stock market has entered a new era and has been enjoying a rapid development. In July 1992, Huaxia, Guotai and Nanfan, the three largest securities companies in China, were established successively.

China's stock market shows features that differ significantly from those of modern-style stock markets owing to the fact that it emerged and has been growing as a hybrid with central-planning and market-oriented components. The most pronounced feature of China's stock market is the complicated split share structure of stocks. Initially,

the stocks listed on the Shanghai and Shenzhen exchanges were only issued to the Chinese residents. Since year-end 1991, China's authority permitted a number of firms to issue stocks to foreign investors for the purpose of favoring foreign investment. China's stocks are classified by accessibility into A shares, B shares, H shares, and N shares. A shares (quoted in RMB, available only to domestic investors) and B shares (quoted in foreign currencies, available only to overseas investors before 2001) are listed on the Shanghai and Shenzhen stock exchanges and are available for mainland China residents[5]. H shares and N shares are listed on the Hong Kong Stock Exchange and other foreign stock exchanges and are available for foreign investors[6]. The complicated structure of China's stocks is reflected not only by the evidence that the trading markets for the four types of share are distinct and separate, but also by the variety of ownership. At that time no one would want to take the responsibility for causing the loss of state assets since private ownership and privatization was political taboo. Consequently, the ownership of equity in a same company has been artificially divided into state-owned shares[7], legal person shares[8], internal person (employee) shares, and social public shares. Among them, social public shares are the sole marketable shares on the exchanges in Shanghai or Shenzhen, and only a few legal person shares have been allowed to transfer ownership between legal persons through the State Trading Automatic Quoting (STAQ) system and the National Electronic Trading (NET) system[9]; while the remaining shares are all non-

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[5] In the past, only foreigners were allowed to trade B shares. Starting from February 2001, mainlanders with legal foreign currency accounts can trade B shares as well.

[6] Due to the reason above, B shares are also issued to foreign investors.

[7] State-owned shares refer to the shares converted from state-owned assets when the SOEs undertook shareholding reforms.

[8] Legal person shares are the shares converted from the assets of institutions or enterprises, which joined the shareholding companies before they were listed.

[9] The Chinese government authorized the connection of the STAQ system in Beijing in 1992 and the NET system in Beijing in 1993 in order to satisfy the trading needs of legal person investors.

negotiable, including the state-owned shares that account for the dominant proportion of overall shares. This results in an unreasonable equity structure and severe non-liquidity.

During the period of almost two decades, the development course of China's stock market can be generally classified into four phases:

The first phase is the symbolic and pilot phase of China's stock market from 1990 to 1997. At that time, the early development of China's stock market can be liken to steps into the dark. The regulatory mechanism of the stock market just began to take shape and imposed price limits and quantity restriction on trade. China's stock market saw the first great bull market in May 1996. Given the immature regulatory mechanism, a great number of problems had arisen accompanying the high speed development of the stock market, such as the black market. The following macro-control policy naturally focused on how to suppress the stock market.

The second phase is from 1997 to 2001 and the stock market is put into real use. It was first put forward constitutionally in the Fifteenth National Congress that shareholding system should become the main form of public ownership system, establishing the stock market firmly. China's stock market started to increase rapidly again from 1999 to 2001. However, a number of problems remained to be solved: the more severe divergence of stock price and economic performance, the price/earnings ratio stayed stubbornly high and constant disclosure of illegal behaviors. Furthermore, the function of the stock market is defined as "revitalizing state-owned enterprises" although most of SOEs are loss-making ones.

The third phase is the transitional period of China's stock market and lasts from 2001 to 2005. The China Securities Regulatory Commission (CSRC) began to get down to improving the regulatory system. But this effort did not achieve the desired results since the problem of the split share structure remained unsettled. During this phase, the stock value was much underestimated and even fell below par. The stock market did not exert its basic function for financing, not to mention for optimizing distribution of resources.

The fourth phase originates from the Split Share Structure Reform in May 2005 till now, with the purpose of solving the institutional bottlenecks constraining the development of the stock market. China's stock market had made significant progress in institutional construction in recent years. Initiated by the Split Share Structure Reform, the fundamental institutional defects of China's stock market for 15 years have been touched and the era of full circulation is being expected to arrive. The implementation of the new Securities Law is another important demonstration that the development of China's stock market has entered a new era. Meanwhile, there had been major advances in other aspects as well, including: the improvement in comprehensive management on securities companies, the enhancement of the quality of listed companies, and the increase in institutional investors. These achievements become the institutional foundation for the transitional stage of China's stock market. Given the successful completion of the reform, the stock market saw the greatest bull market ever since the establishment of China's stock market. Although currently the Shanghai stock exchange

(SSE) composite index was lower than the highest value of 6124.04 in 2007, the long-term development of China's stock market is generally favorably reviewed.

2.3 Government Macro-control Policy and Development Characteristics of the Stock Market ("Policy-Oriented Market")

The establishment of China's stock market and the reform of its operating environment have been both implemented on a gradual basis. Gradual reform has the advantage of making it easier for entrepreneurs and households to adjust their behaviors to achieve improvement gradually. Yet the corresponding guideline "incremental reform" that directed the development of the stock market has incurred a lack of sound, far-sighted development plans. Originally the construction of China's stock market can be characterized as an incentive-based evolution system. After the launching of exchanges in Shanghai and Shenzhen in 1990s, especially after the establishment of the State Council Securities Committee and the CSRC in 1992, the stock market has gradually moved towards the government-led evolution path. Namely, China's stock market did not develop voluntarily and naturally in the way that it did in the developed countries; instead, its development was arranged by the Chinese government and the methods by which stocks are listed and shares issued in China's stock market apparently violated the market principle. The government has become one of the super beneficiaries that take priority over all other market participants. Hence there was an inevitable trend that the government and the related parties that shared common interest with the government would organize a special interest group. This interest-biased system eventually led to the

government's overall intervention and China's stock market gradually became the so-called "policy-oriented market".

Generally speaking, the government's policy intervention in the stock market includes monetary policy, fiscal policy and stock market policy. The government can use monetary policy to affect share prices through changes in money supply and in market interest rates. Fiscal policy can also exert an influence on stock prices through adjustments in state budget, tax revenue and national debt. However, besides indirect adjusting means, namely monetary policy and fiscal policy, stock market policy is regularly employed by the Chinese government to directly control the stock market as well and the control measures are as follows:

(1) Government's Policy Intervention in the Chinese Stock Issuance Market

A. Pei'ezhi (the quota system, 1997) → Hezhunzhi (the sanction system, 2001)

Under a strict planned management system, the volume management of stock issuance was incorporated into the national credit plan and monetary policy right from the start. In 1997, the CSRC promulgated new regulations governing the issue of new shares, with the implementation of the Pei'ezhi (the quota system). The adoption of the quota system resulted in administrative options when screening listing qualification, which make nearly all the listed companies were the SOEs with pervasive poor performances. And then serious problems emerged such as "rent-seeking", "adverse selection" in the process of going public applications, and "reversed transmission of the pressure for easing monetary condition" when many local governments intend to satisfy

their expanding financing requirements. The original stock issue system, Pei'ezhi, was substituted by the Hezhunzhi[10] (the sanction system, or the stock issue approval system) on 17 March 2001 after the Security Law was published in 1999. There is no denying that under the Hezhunzhi, the number of non-state listed companies increased sharply and the average performance of the listed companies improved as well. However, listed non-state enterprises only account for 7%, while the majority of listed companies in China are still SOEs; this phenomenon is understandable since the government's original policy target of setting up the stock market is to support the SOE reforms. To sum up, although been modified, Hezhunzhi still has the government guiding characteristic; accordingly, the competition among listed companies is limited.

B. Listed companies' incremental issuing and follow-up financing are also been regulated.

The characteristic of government's policy intervention is also been reflected by the evidence that listed enterprises' incremental issuing and follow-up financing are been regulated by the government. Generally, the initial public offering cannot satisfy the subsequent financing needs of most of listed Chinese companies on account of the vast majority of non-tradable shares, so the companies after listing will seek for the opportunities to manage follow-up financing by issuing additional equity offer, share allotment, convertible bond and so forth. Although the government regulated this behavior by setting up concrete share ratios and performance indexes, at that time under the circumstances without intermediaries of high integrity, serious problem still existed

[10] Under the new method, the enterprise applicant should be first reviewed by security companies, then the qualified candidates will be recommended to the CSRC, and only after their application were sanctioned by the CSRC could they go public.

because the listed enterprises can win the approval of the authority by submitting falsified financial statements.

(2) Government's Policy Intervention in Merger & Acquisition (M&A) and Restructuring in China's Stock Market

A. Local government authorities compete for control of listed companies.

In China, given that the enterprises initially listed were all local companies, there is no doubt that the stock market primarily benefited the local economy in the first place. However, the authorities, especially local government authorities, have gradually begun to meddle in the M&A and restructuring affairs on the stock market in order to compete for control of listed companies. The M&A and restructuring measures are supposed to serve for the purposes of helping enterprises to expand the scale, to enlarge the market share, and to improve the operational efficiency. Owing to numerous administrative controls exerted by local governments, the M&A and restructuring activities can no longer provide a normal self-repair mechanism that is indispensable to the development of a well-functioning stock market. As a consequence, many hostile takeovers appeared with the intention of occupying the resources of listed companies or of tunneling listed companies through the M&A and restructuring.

B. The real objectives of most shareholders of current listed companies pursuing restructuring are to secure their listing and to maintain the means for further misappropriating.

It's quite confusing that most of companies in China's stock market tend to manifest worse operational performance after listing. The puzzle can be partly explained by the fact that enterprises tend to submit inflated figures in the financial statements for the purpose of implementing the initial public offering and of securing listing. Normally, the listing system should be recognized as an efficient mechanism that can direct financial recourses to its highest valued use. However, the listing qualification has gradually been seen as a measure of getting access to the right of appropriating financial resources without debt service payment. Under the defective quota system, local governments managed to engage in a wide variety of public relations (PR) activities in order to secure their own share of the quota. It has been reported that, for every 100 RMB worth of shares listed, 0.34 RMB - 0.98 RMB is spent on PR for each enterprise on the average. Such large amounts of PR expenditure not only represent a waste of resources, but also lead to an increase in power for money transactions and abundant cases of corruption by using falsified financial statements and prospectuses to secure listing.

C. The government has a partiality for listed companies and has not provided enough legal protection for investors.

Since lots of listed companies had been supported by local governments and even top government institutions, the boundary between securities business and supervisory sectors was quite confusing. Although many listed companies were involved in frequent scandals and illegal transactions, it is not surprising to find that the authorities mainly favor the interests of listed companies and thus have not provided enough legal protection

for investors. The problem is borne out by the truth that the Special Treatment (ST)[11] system and the Particular Transfer (PT)[12] system lasted for more than ten years. Even up to date, the government policies regulating the delisting mechanism are not good enough, for example: the OTC Bulletin Board (OTCBB) still provides a safe haven for listed firms which face delisting. It is argued that these earnings-based delisting requirements are misconstrued. Such policies drive financially healthy firms out of the stock market, and induce listed firms to engage in rampant earnings manipulation in order to avoid delisting. Furthermore, another proof of the government's partiality on listed companies is that the authority tends to treat illegal behaviors with harsh blame but with light penalties. The famous scandal of Zheng Bai Wen[13] has not only devastated many investors, but also broke the market order, impaired credit worthiness of listed firms and images of governments, and shook public confidence in China's stock market. These phenomena carry prominent policy implications for stock market regulation: a powerful securities appraisal institution should be established, together with the formation of a securities rating system and the division of shares into different classes, to ensure that the investors' rights are sufficiently protected.

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[11] Since April 1998, in China's stock market, firms reporting two consecutive annual losses are subject to special treatment. The special treatment means that the stocks are traded with a 5% price change limit each day vs. 10% for normal stocks. And its midterm reports must be audited.

[12] Since July 1999, an ST firm that continues to suffer further loss for one more year will be designated a PT firm. PT stocks can only be traded on Friday, with a maximum 5% upside limit to last Friday's close, but no restriction on the downside. If PT firms cannot become profitable, this will cause the firms' stocks to be suspended from trading or to be delisted.

[13] The scandal of Zheng Bai Wen refers to the incident that the original shareholders of the enterprise Zheng Bai Wen were deprived of half of their stock rights but could not win the lawsuit due to the government's biased intervention.

(3) Government's Policy Intervention in Chinese Securities Companies' Senior Executives and Their Behaviors

In China, since the establishment of each security firm has been examined and approved by the regulatory authority, along with its senior executives mainly appointed by the government, many problems arise. On one hand, the governmental appointment scheme is detrimental to the development of a sound corporate governance system because those executives tend to display non-company performance value orientation and opportunistic behaviors. The widespread breach of the law precisely uncovers the deficiency of the corporate governance system in Chinese listed firms. Most of scandals on the stock market are associated with problems of corporate control, such as: non-disclosure, misleading financial statements, insider trading, market manipulation and so forth. On the other hand, the governmental examination and approval system leads to the underperformance of the supervisory sectors in listed firms. The close relationship between securities companies and the regulatory authorities blurs the boundary between business and supervisory organs. Hence, in many cases, the supervisory authorities turned a blind eye to insider trading and market manipulative activities conducted by executive directors and officers, or even failed to notice the irregularities in the securities companies.

(4) Other Government's Policy Intervention in China's Stock Market

It is difficult to list every aspect of the government's policy intervention in China's stock market. Moderate regulations cannot be blamed in terms of reducing market risk, but what matters most is the real objective of the government, to be specific,

who is the largest beneficiary for whom the government makes efforts to prevent and mitigate financial risks. Regulatory policy has often been used as a vehicle to clear up the accumulated structural problems after a period of development. For instance, China faced the need to undertake a clear-up following the major expansion of the stock market that has occurred since 1996; thereby the government placed restrictions on listed companies' illicit funds and illicit operation. Specifically, in 2001 the government resolutely investigated and banned the illicit flow of bank funds, mainly state-owned bank funds, into the stock market, regardless of the consequent continuous fall of market prices. The resolved practice stems from the fact that most of illicit funds belong to state-owned banks and hence state-owned banks cannot bear all the costs for themselves in the end. It turns out that the government is the ultimate interest subject in the stock market.

2.4 Problems Caused by the Deficiencies of China's Stock Market System

The overall government's policy intervention in the stock market brought about the inefficient supervision system designed to regulate the market, in other words, the market operation deviated from the government's intention. Those regulations led to many distortions in the stock market, such as imperfect market structure and market malfunctions.

(1) Distortions of Chinese Listed Companies' Property Rights System and Corporate Governance Structure

Contemporary institutional economics considers the property rights system and the corporate governance structure as the foundation of economic efficiency. In fact, one of the government's intentions to establish the stock market is to diversify property rights and to realize the separation of ownership and management, thereby furthering the establishment of a modern enterprise system. However, the government's intention fell through owing to its own strict regulatory controls on the stock issuance and the M&A and restructuring. Considering that many problems existed such as adverse choice, rent-seeking, and securities fraud, the property rights system and the corporate governance structure did not get advanced, or even became worse. On China's case, the concrete features of the distortion are that: some stockholders have held the overwhelming percentage of overall shares in Chinese listed companies; the problem of differentiated types of shares results in the abnormal phenomenon that the same shares can be traded with different price, be repaid with different interests and enjoy different rights; the stock markets with A shares, B shares, H shares and N shares are actually segmented; given that most of securities companies' senior executives were appointed by the government, the problem of insider control has also not yet been solved fundamentally. These defects all stem from the government's policy intervention, since excessive regulations distort the enterprises' objective of profit maximization and convert it to administrative objective, or even to personal goal, leading to the malfunction of the stock market's resource distribution effect and the loss of investor's rights. Therefore, if the situation of listed companies' ownership concentration and corporate governance structure cannot be

improved in the long term, the imbalance between corporate quality and the expansion of the stock market will become even greater.

(2) Time-Lag and Instability of the Laws and Regulations in the Stock Market

The Chinese government is confined by its ideology and interest when it enacts and enforces the laws and regulations; accordingly, these laws and regulations always tend to be lagged and unstable, along with ambiguous interest guidelines. The development history of China's stock market is quite convoluted: first came the self issuance, the autonomous transaction second; the OTC trading preceded the nation-wide integrated market; the local government authorities conducted the regulatory constraints and supervision ahead of the unified national regulatory body; the code administrations with too many departments came first and then the unified laws followed. For example, in the initial years, the Shanghai and Shenzhen stock exchanges formulated market regulations independently without a uniform benchmark and hence had significantly different regulations in the rules of company listing, routine operation, microstructure and so forth (Rajen and Yu, 1995). The complexity referring to the case of China is determined by the overall planning called "incremental reform" that leads to the lagged recognition and operation of the government regarding the enactment and performance of the laws and regulations. In conclusion, the laws and regulations in the stock market were vacant, misplaced or "offside", thus causing the dissimilation of market participants and market functions. In consequence, rent-seeking, adverse choice, moral hazard, corruptions and other negative phenomena began to exist in everywhere from various components in the stock market to individual participant. For instance, the government's

initiative of the Split Share Structure Reform incurred the long-run bear market from 2001 to 2005.

(3) Simplistic Structure and Distorted Functions of China's Securities Market

The inconsistent and constantly changing laws and regulations led to the simplistic structure and insufficient, distorted functions of China's securities market. The simplistic structure mainly covers two aspects. First, the securities market has simplistic variety structure, because the government's strict controls imposed on bond issuing and trading lead to the consequence that, under the same conditions, enterprises are inclined to issue stocks instead of bonds, given the lower costs of stock issuance during the contemporary regulatory system. Second, the simplistic market structure of the securities market is evidenced by several facts: first, many once existed local property right exchanges and the STAQ system were all cancelled; second, the plan of establishing a start-up board had been conceived many years, but eventually the board was renamed the second board and became part of the Shenzhen exchange system, showing no major differences compared to the main board market; moreover, the third market serving for delisting is limited by the trading procedures and the exchange hour; in addition, the transaction outside stock exchange is forbidden so far. By apparently confining the possibility of securities issuance and the liquidity of transactions, the simplistic location structure and variety structure are both impediments to the distribution of financial resources on a deeper level and a larger scale.

(4) China's Stock Market Lacks Effective Competition, Constraints and Motivation Mechanisms

Undoubtedly China's stock market cannot function effectively without proper competition, constraints and motivation mechanisms.

A. The market does not have a fully competitive mechanism.

In the Chinese market for the transaction of corporate control rights, most of the transactions are administrative arrangements rather than competitive deals. This situation can be attributed to many problems, such as some stockholders holding the overwhelming percentage of overall shares in listed companies and the split share structure. Since this kind of property right arrangement is uncompetitive and has nothing to do with corporate performance, it is not surprising to find that the current controlling shareholders feel no pressure and motivation to improve the corporate governance structure. The weakness of the competitive mechanism, as one of the fundamental reasons for the inefficiency of China's stock market, leads to imperfect competition and rent-seeking activity. For this reason, we can observe this problem happen again and again: many enterprises went public first to take up the financial resources and then extracted cash from listed companies through tunneling activities.

B. The market does not have a sound constrained mechanism.

State-owned controlling shareholders have no motives to bring the talent market into full play; conversely, they have more responsibilities and motivations to recommend the personnel from related parties to assume the positions of senior executives in listed companies, with the purpose of providing direct opportunities to make profit through

related party transactions. The lack of a sound constrained mechanism in Chinese stock market resulted in the listed companies' principle-agent problem because there is no urgent demand for enterprises to improve the internal governance structure.

C. Given the lack of both competitive and constrained mechanisms, it is not that necessary to provide a strong motivation mechanism.

Under public ownership, it is somewhat inappropriate to have too many incentive measures such as the annual salary system, the profit drawing system, the stock option system, and so forth. One of the incentive standards deserved to be mentioned is that the promotion is a prominent incentive measure with Chinese characteristic. This kind of promotion can be accomplished to promote an enterprise's administrator to be a government official, crossing the boundary between business and supervisory sectors.

In conclusion, the development process of China's stock market manifests strong Chinese characteristics owing to the government-led evolution system: for one thing, China's stock market lacks sound competition, constraints and motivation mechanisms; additionally, the business entity shows no pressing demand to improve the internal corporate governance structure; moreover, capital market's main function of optimizing the distribution of resources to the highest valued use becomes ineffective due to the government's policy intervention. Therefore, under the government-led evolution system, the future trend favoring the development of a better stock market is to ensure that the government withdraws from the stock market to the utmost extent.

CHAPTER 3: PERFORMANCE OF THE STOCK MARKETS AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE IN CHINA

3.1 Introduction

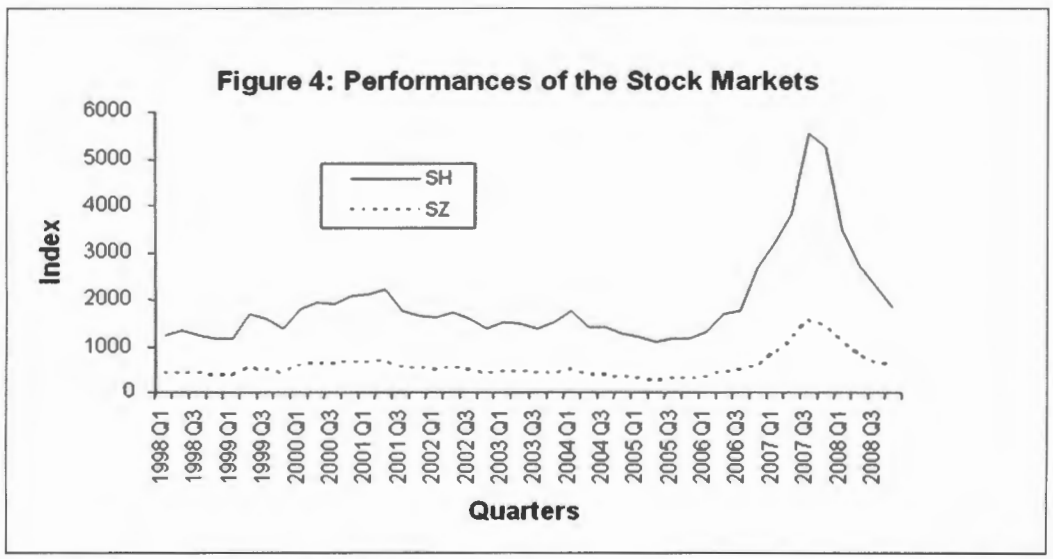
In this chapter, we will investigate actual performance of the Chinese stock markets, and particularly we will investigate the relationship between the stock market development and macroeconomic growth.

To conduct such empirical research, direct application of conventional regression techniques is not appropriate since most macroeconomic time series variables are generally non-stationary so as to make conventional hypothesis-testing procedures based on the t, F, and χ^2 test statistic unreliable. In order to avoid the possibility of spurious results, our empirical investigation is conducted within the framework of testing for unit roots and testing for co-integration in macroeconomic time series, which started gaining popularity in the early 1980's.

To conduct our empirical research, we first test the co-integration relationship between performances of Shanghai and Shenzhen Stock Markets. We further investigate the co-integration relationship between performances of some individual sectors and the whole market. Finally, we verify empirically the relationship between the stock market development and macroeconomic growth in China.

3.2. Performances of the Shanghai Stock Exchange and the Shenzhen Stock Exchange

For investigating whether there exists a co-integration relationship between performances of the Shanghai stock market and the Shenzhen stock market, the quarterly data of the Shanghai Stock Exchange Composite Index and the Shenzhen Stock Exchange Composite Index are collected and used for this empirical study. The data set covers the period from the first quarter of 1998 to the fourth quarter of 2008. The reason that we choose the composite index is that because it is one of the best indexes to reflect the overall performances of the markets. Figure 4 below shows these two time series data.



Source of data: Adapted from the website of http://stock.sohu.com. The data are the closing index at the end of each quarter.

As pointed early, most macroeconomic time series variables are non-stationary, so it is inappropriate to apply the conventional econometric technique to investigate their relationships. To avoid the possibility of spurious results, our empirical investigation is

conducted within the framework of testing for unit roots and testing for co-integration in macroeconomic time series. The unit root test and the co-integration test for two time series variables are briefly outlined here.

Let w_t, $t = 1,2,...,T$, be a particular time series variable under consideration, where T is the sample size. The series is integrated of order d (denoted by $I(d)$) if it attains stationarity after differencing d times. If the series is $I(1)$ it is deemed to have a unit root or it follows a random walk process. This situation arises if its first difference is $I(0)$. When two variables are $I(1)$ series, the conventional regression of one variable on another is very likely to yield unreliable results.

One of the most popular unit root tests is the Augmented Dickey-Fuller test (ADF, Dickey and Fuller, 1979, 1981). The ADF test is performed by testing $\delta_0 = 0$ against the one sided alternative $\delta_0 < 0$ in the regression:

$$\Delta w_t = \beta_0 + \beta_1 t + \delta_0 w_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta w_{t-i} + e_t, \qquad t = 1,2,...,T \tag{1}$$

where e_t is the error term and Δ denotes the first-difference operator. Note that equation (1) incorporates both a constant or intercept (β_0) and a time trend variable t. If the series has a constant term (β_0) but no time trend, the term ($\beta_1 t$) is omitted from equation (1). The optimal lag length (p) can be determined using one of the lag length selection criteria, such as the Schwarz selection criterion.

According to Engle and Granger (1987), if two time series p_t and q_t are both non-stationary in levels but stationary in first differences, i.e., both are integrated of order 1, then there could be a linear combination of p_t and q_t such that $\mu_t = p_t - aq_t$ is stationary, i.e., integrated of order 0. The two time series that satisfy this requirement are said to be co-integrated, and (1, -a) is called the co-integrating vector. The existence of co-integration relationship implies that two time series must be drifting together at roughly the same rate, i.e., they are linked in a common long-run equilibrium. To verify whether these two variables are co-integrated, we need to perform an Ordinary Least Squares (OLS) regression of one variable on another, and then perform the unit root test on the OLS residual, as Engle and Granger (1987) suggested. If the test result shows that the OLS residual is $I(0)$, then two time series are co-integrated; otherwise they are not co-integrated. In the following Table, the test results for this investigation are reported.

Table 1: Results of the ADF Unit Root Tests for the Shanghai and Shenzhen Markets

	Constant only			Constant and time trend		
	Levels		1st differences	Levels		1st Differences
SH	-2.5938	[1]	-4.1670*** [0]	-2.8465	[1]	-4.1283** [0]
SZ	-2.9058*	[1]	-3.6517*** [0]	-3.1350	[1]	-3.6112** [0]
OLS Residual	-2.0138	[5]	-4.2823*** [4]	-2.1396	[5]	-4.2529***[4]

Note: SH and SZ are the Shanghai stock exchange composite index and the Shenzhen stock exchange composite index respectively. The OLS residuals are obtained from the linear regression of SH on SZ. The computed t statistics for variables in levels and in first differences are presented in the Table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The numbers in the brackets [ ] are the optimal lags selected according to the Schwarz selection criterion.

It can be seen from the Table that both the Shanghai Stock Exchange Composite Index and the Shenzhen Stock Exchange Composite Index are $I(1)$ when both the constant term and the time trend are included. When only the constant term is included, the Shanghai Stock Exchange Index is still $I(1)$ but the Shenzhen Stock Exchange index is $I(0)$ at the 10% significance level. These results indicate that both indexes are non-stationary. We then perform an OLS regression of the Shanghai Stock Exchange Composite Index on the Shenzhen Stock Exchange Composite Index, and test the unit root of the OLS residual. The result clearly shows that the residual is $I(1)$, which implies that the two markets are not co-integrated in their performances.

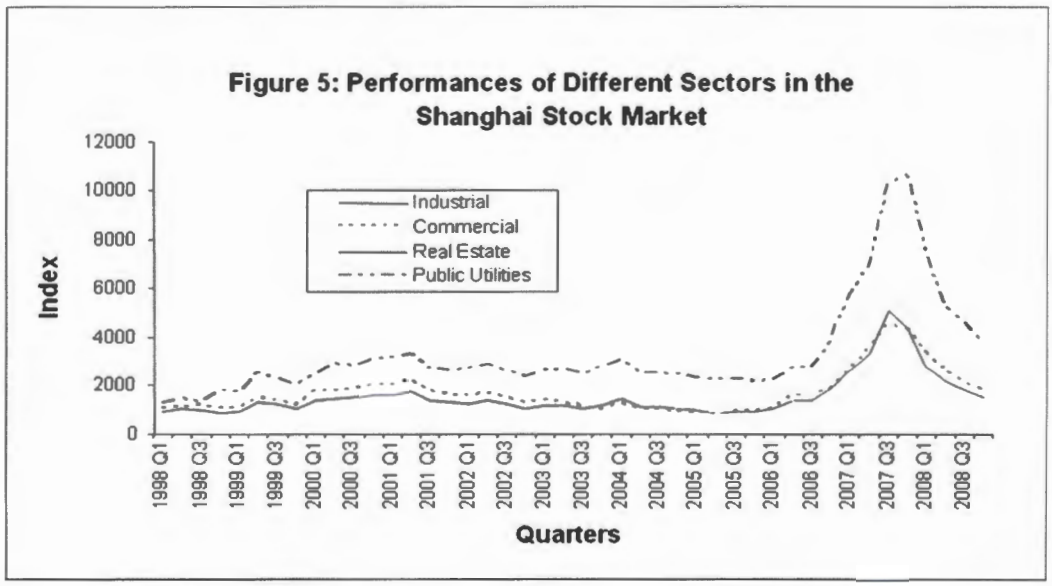
Performance of the stock markets is affected by many factors, including performance of the real sectors, policies, expectations, the impacts of other stock markets in the world, and etc. However, if we look at the long-run performance, the fluctuations of the stock index should relate directly and ultimately to the real economic performance. To this end, the inexistence of co-integration relationship between two markets should reflect the fact that growth of different sectors in the national economy does not share a long-run equilibrium path. This imbalanced growth may result from uneven policy interventions or may result from the structural changes.

3.3. Performances of Different Sectors in the Shanghai and Shenzhen Markets

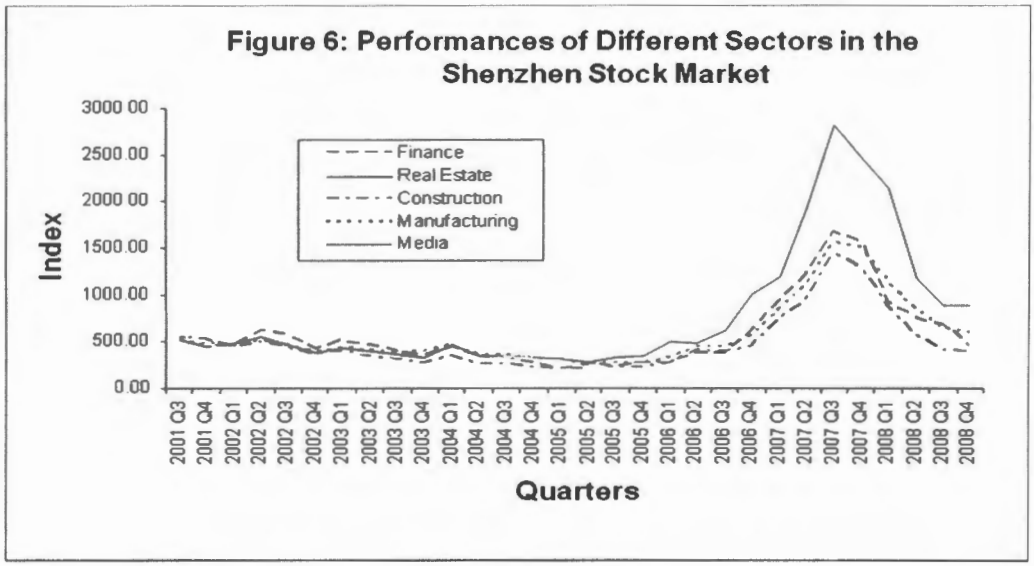
In this section, we adopt the same methodology to test the co-integration relationship between performance of the individual sector and that of the whole market. The result

allows us to understand whether each individual sector shares the equilibrium path with the whole market.

According to the availability of the data, the sectors of Industrial, Commercial, Real Estate, and Public Utilities are selected for the Shanghai Market while the sectors of Financials, Real Estate, Construction, Manufacturing, and Media are selected for the Shenzhen Market. The quarterly data are used and the data set for the Shanghai market covers the period of the first quarter of 1998 to the fourth quarter of 2008 but the data set for the Shenzhen market covers the period from the third quarter of 2001 to the fourth quarter of 2008. The data depicts in the following two figures.



Source of data: Adapted from the website of http://stock.sohu.com. The data are the closing index at the end of each quarter.



Source of data: Adapted from the website of http://stock.sohu.com. The data are the closing index at the end of each quarter.

The ADF unit root test is first performed to each sector index. If it is $I(1)$, then it is regressed on the relevant Stock Exchange Composite Index to get the OLS residual and then the ADF test is performed again to the OLS residual. The results of the tests are summarized in Table 2 in the next page.

For the Shanghai Market, the ADF test results show that all four sector indexes, namely Industrials, Commercials, Real Estate, and Public Utilities, are $I(0)$ at the 10% significance level when only a constant term is included in the test, but when a time trend is also included, the public utilities index is $I(0)$ and all others are $I(1)$. The unit root test on the OLS residuals shows that the OLS residual of Industrial is the only one which is $I(0)$ and thus co-integrated with the Shanghai Stock Exchange Composite Index.

Table 2: Results of the ADF Unit Root Tests for Different Sectors

	Constant only		Constant and time trend	
	Levels	1st differences	Levels	1st Differences
Shanghai				
Industrial	-2.8159* [1]	-4.0598*** [0]	-3.1714 [1]	-4.0202** [0]
(OLS residual)	-5.3142***[1]	-7.7813*** [0]	-5.2705***[1]	-7.6658*** [2]
Commercial	-2.7174* [1]	-3.4166** [0]	-2.9072 [1]	-3.3832* [0]
(OLS residual)	-1.7138 [3]	-10.703*** [1]	-0.9515 [2]	-10.684*** [1]
Real Estate	-2.6148* [1]	-4.8247*** [2]	-1.6199 [3]	-4.8229*** [2]
(OLS residual)	-2.0491 [2]	-10.866*** [1]	-4.0458***[4]	-10.858*** [1]
Utilities	-2.7564* [1]	-4.0243*** [3]	-3.3377* [1]	-3.9478** [3]
(OLS residual)	-2.3836 [0]	-7.5044*** [0]	-2.7481 [0]	-4.1011** [5]
Shenzhen				
Financials	-2.3349 [1]	-3.1034** [0]	-2.4643 [1]	-3.0396 [0]
(OLS residual)	-3.2929** [0]	-4.3881*** [4]	-4.4269** [0]	-4.2625** [4]
Real Estate	-2.1304 [1]	-3.1443** [0]	-2.7934 [1]	-3.0900 [0]
(OLS residual)	-1.8679 [3]	-2.6882* [2]	-1.1913 [3]	-10.530***[1]
Construction	-2.4873 [1]	-3.1356** [0]	-2.7679 [1]	-3.0790 [0]
(OLS residual)	-1.6588 [0]	-5.4083*** [0]	-2.1885 [0]	-5.3116***[0]
Manufacturing	-2.4804 [1]	-2.6652* [0]	-3.0120 [1]	-2.6131 [0]
(OLS residual)	-2.0250 [0]	-6.9273*** [0]	-2.7550 [0]	-6.9682***[0]
Media	-2.3853 [0]	-5.4382*** [0]	-2.4048 [1]	-5.3367***[0]
(OLS residual)	-2.0323 [1]	-9.9238*** [0]	-4.6572***[0]	-10.175***[0]

Note: The quarterly data of the sector indexes of Industrial, Commercial, Real Estate, and Utilities in the Shanghai stock market and the data of the sector indexes of Financials, Real Estate, Construction, Manufacturing, and Media in the Shenzhen stock market are available for this test. The OLS residuals are obtained from regressions of the sector index on SH and SZ respectively. The computed t statistics for variables in levels and in first differences are presented in the Table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The numbers in the brackets [ ] are the optimal lags selected according to the Schwarz selection criterion.

The OLS residuals of Commercials, Real Estate, and Public Utilities are all $I(1)$ and thus these sector indexes are not co-integrated with the Shanghai Stock Exchange Composite Index.

For the Shenzhen Market, the ADF test shows that all series are $I(1)$ at the conventional significance levels when only a constant term is included in the test, but when a time trend is also included in the test, the index of the Media sector is $I(1)$ but others are $I(>1)$, which means these series may be integrated in order 2 or higher. We then conduct the OLS regressions of each sector index on the Shenzhen Stock Exchange Composite Index to obtain the residuals and perform the ADF test on these residuals. The test results show that the OLS residual of Financials is clearly $I(0)$ no matter the test includes only a constant term or includes both a constant and a time trend. Thus, we conclude that the Financials sector shares a common equilibrium path with the market composite index. The OLS residual of the Media is $I(1)$ when only a constant term is included but $I(0)$ when both a constant and a time trend are included. Thus whether the Media sector is co-integrated with the whole market is unclear. For all other sectors, namely Real Estate, Construction, and Manufacturing, the test results indicate that they are all $I(1)$ and thus not co-integrated with the whole market performance.

3.4. The Impact of the Stock Market Development on Economic Growth

To investigate the impact of the stock market development on economic growth, a multivariate co-integration equation is specified as follows:

$$Y_t = \beta_0 + \beta_1 G_t + \beta_2 M_t + \beta_3 C_t + \varepsilon_t \qquad (2)$$

where Y, G, M, and C are real GDP, real government spending, real money supply (M1), and real capitalization of stock market. All βs are co-integration coefficients and ε is the error term and satisfies the standard assumptions. Following Levine and Zervos (1996), we also use the market capitalization as a measure of the development of the stock markets. It should be noted that Equation (2) can also be viewed as the aggregate demand equation, and it determines economic growth assuming that the long-run aggregate supply function is given. Using this co-integration equation, we can detect the impact of the stock market development on economic growth. The available data set for this empirical investigation covers the period from the third quarter of 1995 to the fourth quarter of 2008.

We first test the unit root for each of these variables in Equation (2). If all variables in Equation (1) are $I(1)$, we then conduct the maximum likelihood approach of testing the number of co-integrating vectors suggested by Johansen (1988) and Johansen and Juselius (1990). Theoretically, if there are n variables in the system, it is possible to have a maximum of $n-1$ linearly independent co-integrating vectors. As discussed in Dickey *et al.* (1991), the number of co-integrating vectors can be thought of as representing constraints that an economic system imposes on the movement of the variables in the system in the long run. As such, more co-integrating vectors imply that the system is "more stable" because the system is stationary in many directions. However, if the existence of more than one co-integrating vectors is confirmed by the test results, we will encounter an identification problem. In such a case, we will have to determine

which co-integrating vector represents the true relationship based on the economic theories, as suggested by Johansen and Juselius (1994). The estimated co-integrating coefficients will allow us to examine the impact of the stock market development on economic growth.

Table 3 below summarizes the ADF unit root test results of these variables in the co-integration equation (Equation 2).

Table 3: Results of the ADF Unit Root Tests for Macroeconomic Variables

	Constant only				Constant and time trend			
	Levels		1st differences		Levels		1st Differences	
GDP	-0.5179	[3]	-4.0072***	[3]	-1.1323	[3]	-20.664***	[0]
G	-0.6805	[4]	-3.5184**	[3]	-2.5437	[6]	-3.4068*	[3]
M	-1.2054	[5]	-3.0558**	[4]	-1.0954	[5]	-3.1945*	[4]
CAP	-2.6080	[1]	-4.6144***	[0]	-3.3938*	[1]	-4.5778***	[0]

Note: GDP, G, M, and CAP denote, respectively, real GDP, real government spending, real money supply (M1), and real total capitalization of stock markets. The computed t statistics for variables in levels and in first differences are presented in the Table. *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The numbers in the brackets [ ] are the optimal lags selected according to the Schwarz selection criterion.

According to the test results, all variables in Equation (2) are $I(1)$ when the test includes only a constant term. When the test includes also a time trend, the test result shows the stock market capitalization is $I(0)$ at the 10% significance level, and all other variables are $I(1)$. The Johansen-Juselius multivariate co-integration test is subsequently performed and the result is presented in Table 4 in the next page.

Table 4: Results of the Multivariate Co-integration Test

Hypothesis	Trace Statistic	5% Critical Value	Maximum Eigenvalue Statistic	5% Critical Value
$r \leq 3$	0.78	3.84	0.78	3.84
$r \leq 2$	7.91	15.49	7.12	14.26
$r \leq 1$	23.77	29.79	15.85	21.13
$r \leq 0$	69.96	47.85	46.19	27.58

Estimated co-integrating coefficients normalized on real GDP

Real GDP	G	M	CAP
1	-26.2829	1.7196	0.0728
	(2.888) ***	(0.282)***	(0.102)

Note: *r* denotes the number of cointegrating vectors. Critical Values are based on MacKinnon-Haug-Michelis (1999). The optimal lag length in the co-integration test is selected according to the Schwarz selection criterion. Standard errors are presented in parentheses. *** indicates the 1% level of significance.

The result of the multivariate co-integration shows that at the 5% significance level, both the trace test and the maximum eigenvalue test suggest the existence of one co-integrating vector, which implies that these variables share one long-run equilibrium path. The co-integrating coefficients are then normalized based on real GDP. It can be seen that the increase in government spending has a negative effect on real GDP while increases in money supply and in the stock market capitalization have positive effects on real GDP. However, the significance test indicates that the impact of the stock market capitalization on real GDP growth is statistically insignificant at all conventional levels.

It is interesting to note that government spending has a negative impact on real GDP growth. One possible explanation to this result is that government spending in China has generated strong crowding-out effects on private and local investments and on

the next exports through the real interest rate and the real exchange rate channels (see, for example, Jinshan Liu (2003) for more discussions).

3.5 Summary of the Empirical Findings

From our empirical investigation on the stock market, the data implies that there exists no co-integration relationship between performances of the Shanghai stock market and the Shenzhen stock market. The inexistence of co-integration relationship should indicate the fact that the two markets do not share a common long-run equilibrium path. The empirical results also indicate that most of sector indexes are not co-integrated with the market composite index, except for the Industrial sector index in the Shanghai stock market and the Financials sector index in the Shenzhen stock market. In other words, most of individual sectors do not share a long-run equilibrium path with the whole market. If our empirical analysis accurately reflects the real economic performance, we can come to a conclusion: the growth of different sectors in the national economy and the growth of enterprises with different ownership structure (state-owned ones or non-state-owned ones) are not balanced.

From the number of companies listed in the Shanghai Stock Exchange during the period from 1991 to 2008 (see Table 5 below), one can find that the Industrial sector saw the most rapid rate of increase in the number of companies being listed. Among these years, compared to other sectors, the Industrial sector always takes dominant status and at year-end 2008, the number of companies listed in the Industrial sector accounts for 63%

in total listed companies. The number of listed companies in the sector of public utilities has increased rapidly second only to the Industrial sector. As far as the Commercial sector is concerned, the number of companies listed in the Shanghai Stock Exchange has not changed much in recent years owing to the fact that this sector is quickly approaching saturation point. For this reason, there are many controls that have been placed on the number of companies that have been allowed to list in this sector in the past years.

Table 5: Distribution by Sector Stocks - Shanghai Stock Exchange

No. of Listed Companies (Year-end) / Sector	Total	Industrial	Commercial	Real Estate	Utilities
1991	8	3	2	0	0
1992	29	20	3	1	1
1993	106	63	14	8	11
1994	171	93	34	9	15
1995	188	109	34	9	12
1996	293	164	46	9	22
1997	383	218	50	9	33
1998	438	257	49	9	38
1999	484	291	49	9	39
2000	572	347	54	9	50
2001	646	402	56	13	59
2002	715	451	60	15	67
2003	780	505	60	15	72
2004	837	546	59	17	82
2005	834	544	58	17	83
2006	842	544	58	19	88
2007	860	545	58	24	90
2008	864	547	58	24	91

Source of data: Adapted from the 《Fact Book 2008》 of Shanghai Stock Exchange: P79.

As concerns the number of securities listed in the Shenzhen Stock Exchange during the period from 2002 to 2009 (see Table 6 below), we can see that the Manufacturing sector is predominant compared to other sectors and has the fastest growth

in the number of securities secured listing. Since the sectors of Construction, Media and Financials account for a relatively small number of industries respectively, the number of listed securities is correspondingly low. Although the number of securities within the Financials sector which have secured listing in the Shenzhen Stock Exchange is low, accounting for only 0.8% of all listed securities in 2009, they still occupy an important place in the Shenzhen stock market. At year-end 2009, their total market capitalization accounts for 4.5% of the Shenzhen market total and their average P/E ratio is 62.23, 11% higher than the average for the whole market.

Table 6: Distribution by Sector Stocks - Shenzhen Stock Exchange

No. of Listed Securities (Year-end) / Sector	Total	Financials	Real Estate	Construction	Manufacturing	Media
2002	551	3	19	8	332	3
2003	548	3	23	7	325	3
2004	578	3	27	6	358	3
2005	586	3	26	6	366	3
2006	621	3	25	9	391	3
2007	712	7	30	12	460	3
2008	782	7	34	12	509	4
2009	872	7	42	16	563	5

Source of data: Adapted from the website of Shenzhen Stock Exchange http://www.szse.cn .

The developing imbalance of Chinese industries can be mainly attributed to the structural changes and the government's uneven policy interventions. For one thing, in order to foster economic structural transition in different periods, there are corresponding preferential policies that provide some specific sectors with much better foundation with respect to securing listing. For example, during the period of the Eleventh Five-year Plan (2006 - 2010), China has been going through a process of economic restructuring and this

major background benefits some industries. It is believed that the appreciation of RMB, the upgrading of consumption structure, and the industrial upgrading together shape the features of China's economy in these five years. These promising sectors include: real estate and financials under the condition of the appreciation of RMB; real estate within the context of the upgrading of consumption structure and service; manufacturing relating to the industrial upgrading. In addition, the measure of asset injection is assumed to be favorable to the real estate sector. This view can be proved by the high speed growth in the Real Estate sector in the Shanghai and Shenzhen stock markets since 2005 and the rapid development of Vanke, the leader of Chinese real estate industry, is an excellent example. For another thing, the significance of ownership structure should not be underestimated. Given China's supportive policies of promoting the centralization of state capital in some sectors, such as the basic industries, the knowledge-based high-tech industries and the public utilities industries, it is easier for companies in these sectors to meet the requirements for listing than it is for companies in other sectors. For instance, the reorganizations and listings of Bengang Steel Plate, Zhangze Electric Power and Jiangxi Cement are in conformity with the government's industrial policy. However, it is extensively concerned that through listing, state-owned companies receive preferential treatment and have better access to financial resources, disproportionately favoring the state-owned enterprises at the expense of private ones.

In Section 3.4, we empirically evaluate the relationship between China's stock market development and the long-run economic growth, employing data for the period from the third quarter of 1995 to the fourth quarter of 2008. The results suggest that

government spending is negatively associated with real GDP while money supply and the stock market capitalization is positively correlated to real GDP. However, the contribution of the stock market capitalization on real GDP growth is found to be statistically insignificant. Therefore, our findings are not consistent with some foreign economists' view that stock market development can promote long-run economic growth but consistent with the findings of Harris (1997), who finds that the effects of stock market development on growth are at best very weak for less developed countries.

The main reasons for this situation might be as follows. In Chapter 1, I have summed up five functions by which a stock market can promote economic performance: (1) offering liquidity, (2) mobilizing and pooling savings, (3) generating information concerning potential investments and allocation of capital, (4) mitigating the principal-agent problem, and (5) providing vehicles for trading, pooling and diversifying risks. However, in terms of some immature stock markets, such as China's stock market, they can hardly exert these functions so as to contribute to enhancing economic growth. Specifically, given the very brief history, there are many imperfections in China's stock market, for example: stock prices cannot be accurately and timely reflected due to the irrational behaviors in stock investment. The uneven policy interventions of the government and the unregulated actions of listed companies might also hinder the stock market to exert these functions positively.

To this end, in Chapter 4 we manage to identify some policies that will ease sound stock market development.

CHAPTER 4: THE ROUTE SELECTION OF THE DEVELOPMENT OF CHINA'S STOCK MARKET AND SUGGESTIONS REGARDING CORRECTIVE POLICY CHANGES

4.1 Debate over the Issue of Whether the Macro-control Policies on Stock Markets are Necessary

The school of thought comprised of economists who are against government's policy intervention in the market include: Adam Smith who maintains "laissez-faire" policies, David Ricardo, Alfred Marshall, Hayek who developed this thought, and Milton Friedman who gave more content to this thought through his "Monetarism". Typically, Adam Smith argues that the idealized market society requires little more than a "night-watchman state", leaving other social and economic activities to the "invisible hand".

There are similar thoughts in China as well. As early as in 1994, Gong Chen called for the government to be "a manager, regulator and a formulator of rules, not a direct participant in the market" and opposed the "rescue, boost or suppress" approach of the government to the market. Furthermore, Siwei Cheng (2003) argues that the government, as the owner of the state assets, should not be responsible for the ups and downs of the stock market, not to mention to artificially support or bail out the stock market. Only under a rather unique or most necessary condition can the regulators resort to appropriate government's policy intervention in the market in accordance with legal procedures. Xiaochuan Zhou (2002) also agrees that the market mechanism should be

brought into full play in the stock market as deregulation becomes an inevitable trend. It is pointed out that a referee should not take part in the game; similarly, the government should not intervene in the market. Jinglian Wu (2001) states outright that "Since 1993, the authority has supported or bailed out the stock market many times but has not produced the desired results. Instead of indeed supporting the stock market, these actions contrarily led to share prices' severe volatility, making the government miss many opportunities to guide the sound development of the stock market. The policies aimed to support the stock market and the SOE reforms must be ended since they only brought calamity to the country and the people."

Nevertheless, as the representative of economic thought of State Interventionism, Keynes proposes that the existences of diminishing marginal propensity to consume, diminishing marginal efficiency of capital and market liquidity preference together lead to insufficient effective demand, unemployment and even economic crisis. The economy cannot realize full employment equilibrium only relying on the adjustive function of the market mechanism and hence there is a need for the government to intervene directly in the market. The Old Institutional Economic school, represented by Commons, and the Neo-institutional Economic school, represented by Galbraith, share similar view with the Keynesian School that the market mechanism can get back to equilibrium status not through self-adjusting but through government's policy intervention.

Likewise, in China, Zhengqing Zhou (2002) indicates that in order to improve the stable development of the stock market, the authority should treat the stock market as one

important macro-control target and adjust the irrationally acute fluctuation of stock prices. Kequn Lu (2003) also maintains that the authority should try to avoid steep rise and decline in prices during the development of the stock market. The government should exert necessary and reasonable adjusting control to the stock market since it's a pivotal part of the macro economy.

4.2 Analysis and Evaluation on the Past Macro-control Mode of China's Stock Market

Theoretically, macro-control modes might be classified as follows: the free macro-control mode counting on the market mechanism, the macro-control mode with moderate government's policy intervention, and the macro-control mode with monopolistic government regulation. The macro-control mode completely utilizing the market mechanism is suited to the strong-form efficient market[14] and focuses on how to deal with crisis properly. In fact, it is hard to find the free macro-control mode since there is powerful evidence against the strong-form efficiency. The macro-control mode with moderate government's policy intervention is suitable for the semi-strong efficient market and emphasizes on establishing a regulatory system. The government supervises the activities of stock exchanges against violent fluctuations by imposing restrictions on stock prices and scale to some extent, but seldom through administrative measures. This mode is widely adopted by emerging market countries and regions, such as: Germany, France, Japan, Canada, Australia, Hong Kong, Taiwan and Korea. The macro-control

[14] The efficient-market hypothesis (EMH) asserts that financial markets are "informationally efficient". There are three major versions of the theory: the "weak", "semi-strong", and "strong".

mode with monopolistic government regulation is fit to the weak-form efficient market and attends to form a stable mechanism of stock market. The authority dominates the market operation through severe restrictions on stock scale and prices and employs plenty of administrative measures to intervene directly in the stock market, bringing about the so-called "policy-oriented market".

Fundamentally speaking, China's stock market is still an emerging market with a structure that is far from a mature market, not to mention the development of China's stock market in the early stages. China's stock market was developed during the system transition from a central-planning economy to a market economy and hence assumes the characteristic of imposed institutional change. Therefore the past macro-control mode of China's stock market was initially established based on the macro-control mode with monopolistic government regulation and this mode has had a great influence in some respects even up to now. As Carl Walter put it, "the (stock market is) operated by the state, regulated by the state, legislated by the state, (and) raises funds for the benefit of the state by selling shares in enterprises owned by the state".

From the emergence of China's stock market to now, the Chinese government has boosted and suppressed the market several times. Many sharp ups and downs of the stock market can be attributed to government's policy intervention. Since 1990, the Chinese government has adopted a series of important regulations and macro-control measures, mainly including:

(1) In 1990, the newly established Shenzhen stock exchange was on the brink of collapse due to various reasons. The government mobilized financial institutions to contribute 200 million RMB to boost the stock market, creating the precedent of the Chinese government's bailout policy.

(2) On 30 July 1994, the SSE composite index declined from around 1340 in 1993 to 325, signifying the market downturn. The Chinese government employed three macro-control policies to boost the market: temporary suspension of Initial Public Offering (IPO) and new listings in that year, strict scale control over allotment of shares of listed companies, and steps taken to ensure funds keep coming into the stock market. These policies successfully reversed the market condition and the SSE composite index increased more than 200%.

(3) In the first half of 1999, the SSE composite index once hit the bottom at 1100. At that time, the government granted permission to indirectly invest insurance in the stock market, carried out the pilot project of securities investment funds, and widened financing channels of securities companies. Then China's stock market saw the cross-century great bull market after 19 May 1999, and the SSE composite index was brought up to 2245 in June 2001.

(4) During the period when the SSE composite index fell sharply from 2245 on 14 June 2001 to 1514 on 22 October 2001, there was extensive discussion among the news media concerning the question of whether the government should withdraw from the

stock market. However, on 22 October, the State Council and the CSRC announced that the reduction of state-owned shares had been called off as part of the macro-control policies to boost the market. Moreover, the authority had promulgated 12 favorable policies or so-called "12 medals" within the following one month after 22 October 2001.

(5) When the SSE composite index dropped to 1339 on 29 January 2002, the CSRC held a timely symposium to guarantee a stable stock market environment, reassuring the public through macro-control measure.

(6) When the SSE composite index slumped to 1562 on 24 June 2002, the authority had announced 3 significantly favorable policies within one day, resulting in the great bull market came on 24 June.

(7) In January 2004, the State Council put forward nine policy suggestions regarding the issue that we should go ahead with reform, opening up, stability and development of the capital market; but this measure had produced very little effect. On 5 March 2005, Premier Wen Jiabao re-emphasized the significance of above nine policy suggestions in the government work report at the National People's Congress, especially referring to the development of the stock market. Thereby the macro-control policies on China's stock market have taken a favorable turn.

(8) When the SSE composite index declined to 998.23 on 6 June 2005, the government had initiated a series of measures to ensure the stability of the stock market

and to promote reform. Meanwhile, there was tens of billions of capital bailout plan coming from state funds. Consequently China's stock market saw a huge rise of 300 in the SSE composite index from year-end 2005 to early 2006.

(9) At its eighteenth meeting, the Standing Committee of the Tenth National People's Congress passed the revised Securities Law, or the so-called new Securities Law, which took effect from 1 January 2006. The new Securities Law is designed to provide more protection for the legitimate rights and interests of investors, especially small and medium investors, mainly including: setting up the protection fund of securities investors and the mechanism of compensation for investors' loss. Starting from 1 January 2006 when the new Securities Law came into effect, the SSE composite index had increased rapidly from 1180 to 6124 on 16 October 2007, contributing to the greatest bull market ever since the establishment of China's stock market. During that period, the SSE composite index had not come down considerably except the span when the ministry of finance decided to raise the stamp tax from 1‰ to 3‰.

(10) The SSE composite index reached an all-time high at 6124 on 16 October 2007. On 17 October 2007, in a series of interviews with domestic and international media at the news center of the Seventeenth National Congress, the CSRC vice president, Guangshao Tu, said the risk knowledge is essential for investors to raise their risk consciousness and ability to guard against financial risks and thus should be the focus of current risk education. The SSE composite index declined by 0.92% on the same day, and decreased further by 3.5% or by 210 the next day. The following week saw the

continuously sharp fall of stock prices, raising the curtain on the coming of bear market. Up to 28 March 2008, the SSE composite index struck a new low at 3357, decreased by 54% compared to 6124.

(11) In order to increase the demand of stocks and to pump new funds into the stock market, the CSRC authorized the issue of new funds every Friday continuously for 8 weeks from 8 February to 26 March 2008, more than 20 of which are stock funds. However, these measures did not achieve good results and the SSE composite index continued to fall.

Looking back on the development course of macro-control policies exerted on China's stock market, we can find that the measures employed by the government have been getting mature gradually, changing from previously direct administrative intervention to presently indirect intervention involved more market means. Judging from the effects of the macro-control policies, at present the authority can prevent dramatic ups and downs caused by former administrative intervention. The macro-control mode of China's stock market is been gradually transformed from the macro-control mode with monopolistic government regulation to the one with moderate government's policy intervention. Correspondingly, China's stock market is gradually changing from the policy-oriented market with administrative characteristics to the one with market characteristics.

4.3 The Reform Orientation of the Macro-control Policies on China's Stock Market Should be Transformed from Government-controlled Strategies to Market-oriented Ones

(1) Correct the Role of the Government and Get Rid of Its Profit-oriented Inclination

The Chinese government mainly plays three roles in the stock market: first, the government is the market regulator that governs market behavior, ensuring the smooth operation of the stock market; second, the government is the largest shareholder of listed companies that manages to control more social capital through the SOE reforms and the issue of public shares, ensuring the preservation and appreciation of state assets; third, the government is the protector of the interests of investors investing in small and medium-sized enterprises (SMEs). For this reason, as long as one party confronts a problem or suffers loss of interest, whether concerning listed companies or investors, the government is urged to step in to settle the problem or to protect that party's own interest. This resulted in the so-called "reversed transmission of the pressure for easing monetary condition", the pressure that listed companies and investors exert on the government to increase intervention. Therefore, in order to correct the role of the government and get rid of its profit-oriented inclination, the government should make greater efforts to make better transaction regulations, to maintain the market order and to protect the interests of investors, instead of assuming excessive responsibilities in the stock market.

Specifically, China's gradual economy reform policies have always been focused on the SOE reforms. The policy orientation of "revitalizing state-owned enterprises" can

be reflected from everywhere, such as: the financial support in the early 1980s, the subsequent credit aid, the support for state-owned share in the early 1990s, and the Split Share Structure Reform initiated in 1995. However, on the whole, the performance of non-state-owned enterprises is superior to that of state-owned enterprises; and the performance of non-state-owned listed companies is clearly better than that of state-owned listed companies. That is to say, the government's favorable policies on the SOEs failed to take effect. In order to actually improve the performance of SOEs, measures should be taken to deepen the reform of SOEs in competitive industries, especially the reform of the split share structure in state-owned listed companies, and to strengthen corporate management. Also, the regulatory protections extended to state-owned firms should be weakened, opening them up to tougher enforcement practices, delistings and criminal prosecutions. Accordingly, the general reform-orientation should be altered from centering on raising funds for the SOE reforms to centering on improving the efficiency of optimizing distribution of resources.

(2) The Multi-level Stock Market Should be Established to Better Fulfill Its Function

Although grown rapidly in recent years, China's stock market has only main board market but without second board market or growth enterprise market until October 2009. This situation, to some extent, interfered with the proper functioning of the stock market for a long time. Many small and medium-scale venture enterprises with promising prospects cannot meet the listing requirements of main board stock market due to their difficult financial conditions and thereby have limited financing channels which obstruct their development. There are considerable advantages to establish the multi-level stock

market with growth enterprise market. On one hand, this measure can satisfy all types of issuers and investors with different market and risk preferences while diversifying the risk by avoiding the problem of unidirectional pricing. On the other hand, the multi-level stock market can provide sufficient funds for the development of high-tech enterprises and speed up the upgrade of industrial structure. Moreover, the establishment of second board market can correspondingly increase listed companies and cut the listing costs by decreasing the competition between qualified enterprises. The illegal operations on the stock issuance market might also be expected to become less. On 30 October 2009, 28 stocks had been introduced in the opening of the growth enterprise market. Considering that most of outstanding enterprises have been distributed in the eastern coastal areas, we may then establish other second board stock market in the central and western areas. By doing this, we can expedite the development of central and west regions and narrow the gap of the economic development between the eastern and western parts of China. Some major cities which possess good financial infrastructure and sufficient human capital, such as Chongqing, Chengdu and Wuhan, might be good choices.

The OTC market should be legalized as part of the multi-level stock market as well. It is suggested that when SMEs listed on the OTC market compete with large enterprises listed on the Shanghai and Shenzhen stock exchanges, the performance and competitiveness of listed companies will get improved through the market mechanism instead of through previously administrative controls on M&A.

(3) Facilitate Diversification of Portfolios and Investing Tools in the Securities Market

The financial tools in the securities market can be classified into two categories: one refers to basic financial tools, such as stock, bond and fund; the other refers to derivative products, such as future, option and forward etc. Most of mature securities markets abroad have already developed many derivatives, such as the stock index future (SIF), and consequently are capable of smoothing out price fluctuations so that a balanced and stable development of a stock market can be realized. In China, due to the lack of the short mechanism, investors can make profit only when the stock market goes up. The overexuberant investors become the force that drives the market even higher with escalating stock indexes, finally incurring the stock market bubbles and a big fall in share prices.

Therefore, developing financial derivative deal and expanding financial derivative market are urgent. The development of China's financial derivative market is still in its beginning stage, with fewer varieties of derivatives. Especially, as the most important hedging tool, the SIF[15] has just been delivered, significantly restraining the development of China's securities market for quite a long time. Those innovative financial tools that can offer high leverage, low transaction cost, strong liquidity and convenience of transaction, such as SIF, executive stock option, future and convertible corporate bond, might be considered appropriate.

[15] The latest progress is that the opening ceremony of the SIF was held on 8 April 2010 and that the SIF was been placed on the stock market on 16 April 2010.

(4) Improve Legal and Regulatory Environment Underpinning the Stock Market and Institutionalize the Market Supervision

Many researchers have suggested that attention must turn towards ensuring that a sound legal framework is in place to support the development of an efficient stock market. In the study on the relationship between law and stock market development, Levine (1998) points out that the legal system is essential because those enterprises that tend to acquire long-term financing resources must convince the investors that they have the ability to prevent insiders' opportunistic behaviors. The empirical research from Demirgü c-Kunt *et al.* (1996) also reveals that active stock market and effective laws are beneficial for enterprises to raise external finance through debt and equity, thereby promoting the development of enterprises; and per capita GDP is positively correlated with the efficiency of law. Rafael La Porta *et al.* (1998), after examining a sample of 42 countries, demonstrate that enterprise financing structure of different countries varies according to the extent that laws can protect the obligatory right and the interests of minority shareholder; those countries that cannot provide enough protection for the interests of shareholders tend to have less developed stock markets.

Table 7: The Summary of Laws and Regulations in China's Stock Market

Classification	Quantity
State Laws	40
Administrative Laws	86
Department Rules	374
Self-regulatory Rules	20

Source of data: Adapted from the website of www.csrc.gov.cn .

The laws and regulations construction in China's stock market have been improved by great effort. This tough course of exploration can be reflected from Table 7 above: there are 520 laws and regulations in total; but there are too many administrative laws and department laws compared to state laws (11.5 times). From the contents of laws and regulations, we can see that the market subject being protected varies continuously. In the Temporary Regulations on Stock Emission and Dealing promulgated by the state council on 22 April 1993, Article 4 stipulates that the public ownership should maintain its status as the mainstay of the national economy and the preservation and appreciation of state assets should be ensured under the condition of stock emission and dealing. In fact, this study puts the market players on distinct platforms according to different degrees of governmental protections on multi-shareholders. The Securities Law took effect on 1 July 1999 does not undergo substantial modification compared to previous laws and even imposes restrictions on the stock market participants and the investment. Until January 2004 when the State Council put forward nine policy suggestions regarding the issue of going ahead with reform, opening up, stability and development of the capital market, it is the first time that the government puts the protection of investors' interests in the first place. At present, two fundamental securities laws - Company Law and Securities Law – are still being revised, showing policies more favorable for market orientation.

CHAPTER 5: CONCLUSIONS

5.1 Summary and Contributions

With the rapid development of China's stock market, studies in the impact of the stock market development on economic growth have stimulated the enthusiasm of many researchers. Based on such backgrounds, this research reviews early theoretical discussions on the relationship between stock market development and economic growth, and briefly presents the development process of China's stock market. Following that, using the time series analysis techniques, this study investigates the development and performances of the Chinese stock markets and the relationship between China's stock market development and economic growth. In conclusion, our empirical results are consistent with the theoretical discussions that a policy-oriented stock market is less efficient and is, to a certain extent, unlikely to produce a significant and positive effect on economic growth. Given that one of the most important barriers to the development of China's stock market might be administrative interference of the government, this research finally addresses some corrective policy changes

One of the main contributions of this research is that it has conducted the empirical analyses at three levels, which provide a unique perspective in empirical studies. First of all, in view of the unequal industrial distribution within the Shanghai stock market and the Shenzhen stock market, the inexistence of co-integration relationship between the two markets should reflect the fact that growths of different

sectors in the national economy do not share a long-run equilibrium path. Furthermore, the empirical investigation shows that most of individual sectors do not share a long-run equilibrium path with the whole market, except for the Industrial sector in the Shanghai stock market and the Financials sector in the Shenzhen stock market. This study has provided some explanations to the developing imbalance of Chinese industries and concluded that this can be mainly attributed to the structural changes and the government's biased policy interventions. In addition, we empirically evaluate the relationship between China's stock market development and the long-run economic growth. The empirical results indicate that the contribution of the stock market capitalization on real GDP growth is found to be statistically insignificant and hence there are no obvious relevant relations between stock market development and economic growth in China. This finding is consistent with the findings of Harris (1997), who finds that the effects of stock market development on growth are at best very weak for less developed countries.

These conclusions have basically reflected the current situation of China's stock market development. Given various congenital deficiencies and the very brief history, there are many barriers to the development of China's stock market, such as: distortion of capital market function, prevailing of speculation, asymmetric information, and government's administrative interference etc. These adverse factors prevent the stock market to exert those functions by which a stock market can influence economic performance in a positive way. This can to some extent explain the result suggested by our empirical investigation that the impact of China's stock market development on

economic growth is limited and hence we cannot impractically over evaluate the influence of stock market development at the present stage.

Among these factors, this research has pointed out that the biggest obstacle to the healthy development of the stock market might be government's excessive policy intervention. Therefore, this study finally addresses some corrective policy changes. In short, the future trends favoring the development of a sound stock market are to marketize share issues, introduce multi-level transactions, promote financial innovations, improve financial statements and the quality of listed companies, and subsequently strengthen the legal framework.

5.2 Limitations and Future Studies

For one thing, it is important to point out that the development history of China's stock market is barely 20 years, and the high speed period of development, along with the rapid increase in the stock market capitalization and the number of listed companies, came only after 2000. Accordingly, our empirical analysis is conducted within a comparatively short time frame, which implies that our results should be viewed as suggestive findings that stimulate further research rather than as conclusive ones. With the constant completion and development of the stock market afterwards, future studies based on a longer time frame and a larger sample remain to better understand the development and performances of the China's stock markets and the relationship between China's stock market development and economic growth.

For another thing, we cannot ignore the fact that stock markets are only a small part of the overall financial markets. More comprehensive studies which combine stock market with bond market and foreign exchange market are required to create a better understanding of the relationship between securities market development and economic growth, and to identify more appropriate policies that will ease sound securities market development.

Appendix:

Table 8: Data for Empirical Investigation

Year	Consumer Price Index (previous corresponding period=100)	Nominal GDP (100M of RMB)	National Government Expenditure (100M of RMB)	Money (M1) (100M of RMB)	Market Capitalization (A Share + B Share) (100 M of RMB)	Shanghai Stock Exchange Composite Index (closing price)	Shenzhen Stock Exchange Component Index (closing price)
1995 Q3	113.2	41,502.56	4,074.45	22,500.00	4,091.36	722.43	1,164.97
1995 Q4	110.1	60,793.73	6,823.72	23,987.10	3,474.28	555.29	987.75
1996 Q1	109.8	14,261.22	1,178.64	23,909.00	3,598.85	556.39	1,015.02
1996 Q2	108.6	30,861.78	2,901.69	24,600.00	5,961.91	804.25	2,059.13
1996 Q3	107.4	48,533.06	4,760.07	26,230.00	7,799.36	875.53	2,764.04
1996 Q4	107.0	71,176.59	7,937.55	28,514.80	9,842.39	917.02	3,215.83
1997 Q1	104.0	16,256.68	1,394.91	29,058.00	14,072.23	1,234.62	4,543.00
1997 Q2	102.8	34,954.31	3,512.60	31,074.00	16,664.71	1,250.27	5,081.45
1997 Q3	101.8	54,102.36	5,612.65	32,245.00	14,922.14	1,097.38	3,916.96
1997 Q4	100.4	78,973.03	9,233.56	34,826.30	17,529.24	1,194.10	4,184.84
1998 Q1	100.7	17,501.31	1,566.49	33,110.00	18,679.33	1,243.02	4,063.29
1998 Q2	98.7	37,222.72	4,008.79	33,776.00	21,412.14	1,339.20	3,737.14
1998 Q3	98.5	57,595.24	6,593.52	36,501.00	20,452.65	1,242.90	3,283.37
1998 Q4	99.0	84,402.28	10,798.18	38,953.70	19,505.65	1,146.70	2,949.32
1999 Q1	98.2	18,789.68	1,840.24	38,054.00	20,180.12	1,158.05	2,872.15
1999 Q2	97.9	39,554.88	4,648.77	38,822.00	30,099.90	1,689.43	4,702.77
1999 Q3	99.2	61,414.22	7,721.99	41,914.00	29,126.22	1,570.70	3,967.84
1999 Q4	99.0	89,677.05	13,187.67	45,837.30	26,471.18	1,366.58	3,369.61
2000 Q1	99.8	20,646.96	2,376.43	45,158.45	36,562.62	1,800.23	4,532.31
2000 Q2	100.5	43,748.22	5,838.34	48,024.40	40,690.00	1,928.11	4,830.67
2000 Q3	100.0	68,087.50	9,452.81	50,616.89	41,849.30	1,910.16	4,523.66
2000 Q4	101.5	99,214.55	15,886.50	53,147.15	48,090.94	2,073.48	4,752.75
2001 Q1	100.8	23,299.54	2,832.99	53,033.36	50,908.45	2,112.78	4,965.99
2001 Q2	101.4	48,950.86	7,044.65	55,187.36	53,630.58	2,218.03	4,716.90
2001 Q3	99.9	75,818.19	11,479.63	56,824.00	45,831.36	1,764.87	3,498.63
2001 Q4	99.4	109,655.17	18,902.58	59,871.59	43,522.20	1,645.97	3,325.66
2002 Q1	99.2	25,375.69	3,511.35	59,474.83	43,050.55	1,603.91	3,173.90
2002 Q2	99.2	53,341.01	8,297.36	63,144.00	47,736.46	1,732.76	3,551.33
2002 Q3	99.3	83,056.71	13,497.56	66,799.76	44,243.44	1,581.62	3,243.93
2002 Q4	99.6	120,332.69	22,053.15	70,881.79	38,329.13	1,357.65	2,759.30
2003 Q1	100.9	28,861.80	3,892.39	71,438.82	42,729.13	1,510.58	3,101.86
2003 Q2	100.3	59,868.90	9,665.85	75,923.23	41,629.53	1,486.02	3,224.81
2003 Q3	101.1	93,329.30	15,264.89	79,163.88	39,080.79	1,367.16	3,054.90
2003 Q4	103.2	135,822.80	24,649.95	84,118.57	42,457.72	1,497.04	3,479.80

2004 Q1	103.0	33,420.60	4,502.00	85,815.57	50,417.42	1,741.62	4,060.14
2004 Q2	105.0	70,405.90	10,802.85	88,627.14	40,408.09	1,399.16	3,275.85
2004 Q3	105.2	109,967.60	17,144.57	90,439.05	40,928.61	1,396.70	3,453.91
2004 Q4	102.4	159,878.30	28,486.89	95,970.82	37,055.57	1,266.50	3,067.57
2005 Q1	102.7	38,763.60	5,209.35	94,743.19	34,802.72	1,181.24	3,170.35
2005 Q2	101.6	81,206.80	12,421.38	98,601.25	31,590.01	1,080.94	2,760.23
2005 Q3	100.9	125,577.50	19,949.94	100,964.00	33,367.60	1,155.61	2,903.11
2005 Q4	101.6	183,217.40	33,930.28	107,278.76	32,430.28	1,161.06	2,863.61
2006 Q1	100.8	44,419.80	6,291.65	106,737.08	35,341.74	1,298.30	3,516.40
2006 Q2	101.5	93,611.60	14,601.09	112,342.36	44,200.79	1,672.21	4,301.66
2006 Q3	101.5	144,569.60	23,156.95	116,814.10	52,282.79	1,752.42	4,326.78
2006 Q4	102.8	211,923.50	40,422.73	126,035.13	89,403.89	2,675.47	6,647.14
2007 Q1	103.3	53,058.29	7,288.75	127,881.31	128,033.35	3,183.98	8,549.20
2007 Q2	104.4	112,458.29	17,919.99	135,847.41	166,232.79	3,820.70	12,546.45
2007 Q3	106.2	174,427.63	29,016.33	142,591.57	253,157.00	5,552.30	18,864.55
2007 Q4	106.5	257,305.56	49,781.35	152,560.08	327,140.89	5,261.56	17,700.62
2008 Q1	108.3	63,474.49	9,506.74	150,867.47	226,789.14	3,472.71	13,302.14
2008 Q2	107.1	134,725.78	22,882.02	154,820.15	178,035.09	2,736.10	9,370.78
2008 Q3	104.6	208,025.32	36,428.14	155,748.97	148,163.98	2,293.78	7,559.27
2008 Q4	101.2	300,670.00	62,592.66	166,217.13	121,366.43	1,820.81	6,485.51

Source of data: The data of the Consumer Price Index and the Nominal GDP are adapted from the National Bureau of Statistics of China. The National Government Expenditure is adapted partly from the National Bureau of Statistics of China and partly from the database of China Economic Information. The M1 is adapted from the People's Bank of China. The Market Capitalization is adapted from the database of CEIC. The data of the Shanghai Stock Exchange Composite Index and the Shenzhen Stock Exchange Composite Index are adapted from the website of http://stock.sohu.com .

Table 9: The Shanghai Stock Exchange Industrial Index (Closing Price)

Year	SSE Industrial Index	SSE Commercial Index	SSE Real Estate Index	SSE Utilities Index
1998 Q1	933.77	1,010.64	1,888.63	1,225.18
1998 Q2	1,003.78	1,118.66	2,031.62	1,394.47
1998 Q3	938.09	1,149.96	1,716.55	1,277.40
1998 Q4	867.09	1,014.38	1,591.18	1,735.72
1999 Q1	886.06	1,048.91	1,508.21	1,707.68
1999 Q2	1,286.65	1,414.80	2,111.93	2,458.45
1999 Q3	1,197.76	1,361.14	1,930.83	2,277.58
1999 Q4	1,036.75	1,191.43	1,850.41	1,978.66
2000 Q1	1,359.34	1,763.55	2,100.42	2,415.12
2000 Q2	1,440.65	1,770.49	2,344.33	2,933.13
2000 Q3	1,460.93	1,804.26	2,099.55	2,802.02
2000 Q4	1,591.03	1,982.82	2,490.88	3,045.66
2001 Q1	1,633.88	1,987.77	2,503.00	3,187.48
2001 Q2	1,725.37	2,190.30	2,655.98	3,303.37
2001 Q3	1,356.40	1,753.47	2,297.44	2,674.23
2001 Q4	1,260.16	1,577.86	2,164.58	2,600.99
2002 Q1	1,223.94	1,526.47	2,122.55	2,618.62
2002 Q2	1,328.03	1,624.35	2,254.99	2,820.59
2002 Q3	1,209.32	1,514.55	2,130.94	2,584.16
2002 Q4	1,043.55	1,244.50	1,706.43	2,330.55
2003 Q1	1,166.47	1,332.69	1,793.13	2,570.83
2003 Q2	1,148.87	1,197.97	1,636.94	2,598.66
2003 Q3	1,061.27	1,091.30	1,431.80	2,418.32
2003 Q4	1,191.00	997.51	1,263.75	2,776.92
2004 Q1	1,400.13	1,213.92	1,627.57	3,044.76
2004 Q2	1,128.90	975.88	1,204.78	2,453.56
2004 Q3	1,120.62	974.79	1,143.57	2,469.95
2004 Q4	1,004.76	918.59	976.51	2,373.16
2005 Q1	937.43	835.39	936.94	2,234.77
2005 Q2	829.36	794.65	790.92	2,196.95
2005 Q3	897.50	901.73	949.55	2,209.08
2005 Q4	908.63	879.76	995.27	2,138.03
2006 Q1	1,026.45	1,052.92	1,265.92	2,168.75
2006 Q2	1,331.18	1,539.93	1,258.58	2,692.55
2006 Q3	1,361.50	1,603.43	1,661.91	2,709.39
2006 Q4	1,850.78	1,801.81	2,574.23	3,850.41
2007 Q1	2,565.01	2,607.55	3,451.76	5,660.81
2007 Q2	3,375.28	3,539.38	5,280.33	6,915.02
2007 Q3	5,064.64	4,518.33	7,382.52	10,328.64
2007 Q4	4,394.96	4,346.03	6,399.66	10,578.98
2008 Q1	2,794.02	3,374.62	5,708.13	7,294.58
2008 Q2	2,224.83	2,652.25	2,918.75	5,269.47

2008 Q3	1,834.59	2,087.04	2,461.88	4,543.95
2008 Q4	1,465.53	1,776.77	2,266.22	3,742.66

Source of data: Adapted from the website of http://stock.sohu.com . The data are the closing index at the end of each quarter.

Table 10: The Shenzhen Stock Exchange Industrial Index (Closing Price)

Year	Financials	Real Estate	Construction	Manufacturing	Media
2001 Q3	544.25	524.23	505.19	508.31	571.91
2001 Q4	516.81	453.48	445.44	476.11	462.02
2002 Q1	461.39	492.35	453.89	462.44	416.31
2002 Q2	609.61	547.78	495.19	500.64	443.34
2002 Q3	568.59	469.36	442.78	458.77	383.02
2002 Q4	429.38	388.98	363.59	389.08	325.15
2003 Q1	497.70	436.69	387.83	422.34	371.38
2003 Q2	458.58	412.80	331.96	406.61	349.50
2003 Q3	384.21	369.49	295.45	372.45	321.18
2003 Q4	357.25	339.63	271.16	384.07	286.80
2004 Q1	442.13	473.54	332.94	461.30	427.15
2004 Q2	343.48	360.23	253.13	353.27	297.88
2004 Q3	328.39	357.04	248.84	356.05	322.57
2004 Q4	270.88	332.37	224.92	311.64	308.31
2005 Q1	210.18	317.57	199.44	295.30	286.60
2005 Q2	247.48	290.54	195.80	257.25	203.27
2005 Q3	239.24	330.73	222.87	277.39	195.49
2005 Q4	261.33	360.51	219.44	273.12	181.46
2006 Q1	277.78	506.48	269.49	320.34	199.47
2006 Q2	377.60	490.13	409.24	444.31	264.81
2006 Q3	374.31	626.59	393.72	442.45	294.59
2006 Q4	612.64	1008.39	438.68	555.21	249.07
2007 Q1	918.73	1200.91	733.88	845.34	437.45
2007 Q2	1220.77	1930.91	935.82	1094.96	445.40
2007 Q3	1676.13	2819.82	1424.85	1555.77	808.28
2007 Q4	1555.10	2462.82	1261.63	1500.79	688.55
2008 Q1	908.10	2135.44	859.66	1135.20	512.56
2008 Q2	737.52	1179.83	548.68	828.33	383.94
2008 Q3	678.38	898.48	407.20	647.67	303.68
2008 Q4	450.95	887.13	380.84	584.60	323.28

Source of data: Adapted from the website of http://stock.sohu.com. The data are the closing index at the end of each quarter.

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